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ALASKA AGRICULTURAL EXPERIMENT STATIONS
SITKA, ALASKA
Under the supervision of the
UNITED STATES DEPARTMENT OF AGRICULTURE

REPORT OF THE ALASKA AGRICULTURAL EXPERIMENT STATIONS

1928

Issued September, 1929

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ALASKA AGRICULTURAL EXPERIMENT STATIONS, SITKA, KODIAK, FAIRBANKS, AND MATANUSKA

[Under the supervision of the Office of Experiment Stations, United States Department of Agriculture]

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CONTENTS

	Page
Report of the director	1
Sitka station	3
Distribution of nursery stock	3
The orchard	3
Grapes	3
Small fruits	3
Jerusalem artichokes	4
Vegetables	5
Herbs	8
Potatoes	8
Floriculture	9
General crop work	9
Fairbanks station	10
Weather conditions	10
Miscellaneous field crops	10
Forage crops	11
Grain crops	12
Potatoes	14
Vegetables	14
Fairbanks station—Continued.	
Berries	15
Cattle	15
Station improvements	17
Matanuska station	17
Weather conditions	17
Feeding value of some locally grown forage crops	18
Miscellaneous field crops	20
Grain crops	22
Potatoes	22
Rotation plats	24
Cattle	24
Kodiak station	25
Cattle	25
Survey of the Aleutian Islands and vicinity	26
Survey of the bunch-grass range at Healy and Lignite	29
Weather reports	31

REPORT OF THE DIRECTOR

H. W. Alberts

The main experimental activities of the various stations again were concentrated upon unsolved problems of the regions in which they are located.

Most of the farmers in the region near Fairbanks have been producing cereal grains and potatoes. Within the last two years, however, the production of wheat in the region has declined, and oats are being grown in its stead for use as forage. A small number of livestock is being raised on the farms.

Dairying is making rapid progress in the Matanuska Valley. Commercial dairying is being carried on at a profit by farmers who keep dairy animals and ship cream for butter making to the recently established creamery at Curry. The skim milk by-product is fed to hogs and calves. In the summer of 1927 the stations began a cooperative experiment in creamery work with the Alaska Railway. The animal husbandman of the Matanuska station supervises the experimental work of the creamery, and the Alaska Railway operating the creamery, in turn finances the undertaking and buys the cream from the farmers for making butter for use by its commissary. The

creamery record for the year ended December, 1927, is shown in Table 1.

TABLE 1.—*Cream and butter record of the creamery operated by the Alaska Railway for the year ended December 31, 1927*

Month	Cream received	Butterfat received	Butter made	Month	Cream received	Butterfat received	Butter made
1927	*Pounds*	*Pounds*	*Pounds*		*Pounds*	*Pounds*	*Pounds*
June	170. 5	52. 3		October	305. 5	118. 7	149. 0
July	201. 5	67. 5		November	733. 5	242. 4	287. 0
August	473. 0	157. 1	190. 5	December	764. 0	234. 3	260. 0
September	437. 5	152. 4	169. 5				

The hog-breeding work of the Fairbanks station was transferred to Matanuska in the spring of 1927 because a greater number of hogs are produced in the region of Matanuska than at Fairbanks.

FIGURE 1.—The station's exhibit at the Juneau fair

Because of the high cost of keeping livestock at Kodiak, the activities of that station were transferred to Kalsin Bay August 1, 1928. The work at Kodiak was temporarily discontinued. The station buildings were repaired at Kalsin Bay during the summer, and hay was put up to feed the herd of purebred Galloway cattle during the winter.

During the year both the Fairbanks and the Matanuska stations made representative agricultural exhibits at each of the Tanana Valley fair at Fairbanks, the southwestern Alaska fair at Anchorage, and the southeastern Alaska fair at Juneau. (Fig. 1.)

The Sitka station also sent an exhibit to the fair at Juneau. All the stations contributed to the Alaskan (educational) exhibit at the International Hay and Grain Exhibition at Chicago.

During July and August, 1928, the director of the stations made an agricultural survey of the Aleutian Islands and vicinity to determine their grazing possibilities. The report of the survey is given in full on page 26.

During the week of August 18–25, 1928, W. T. White, associate animal husbandman of the Matanuska station, made a survey in the region of Healy and Lignite, Alaska, to learn the value and extent of the bunch-grass range there. The report of the survey is given in full on page 29.

SITKA STATION

The season of 1928 was cool and wet during the growing period, which extended from May to September, inclusive. The mean temperature for the period was 51.8° F., and the total precipitation, 27.1 inches. There were 14 clear days, 59 partly cloudy days, and 80 cloudy days during the growing season. The last killing frost in the spring occurred May 26, and the first killing frost in the fall October 8, which gave a frost-free period of 135 days.

DISTRIBUTION OF NURSERY STOCK

During the spring months plants that had been produced at the station were distributed for trial to 170 residents in different parts of Alaska. The distribution included 1,452 strawberry plants, 404 raspberry plants, 173 gooseberry plants, 356 currant plants, 139 apple trees, 48 rhubarb plants, and 630 ornamental shrubs. In addition to these, 42 pounds of seed potatoes were distributed in 2-pound to 4-pound lots.

THE ORCHARD

Apples.—Apples were almost a complete failure this year. The trees began to blossom June 10 and were in full bloom July 5. Only a few trees set fruit, which proved to be very inferior in quality, largely on account of the presence of the codling moth.

Cherries.—Only three cherry trees bore fruit. One tree of Early Richmond yielded 2 quarts of cherries, and two trees of Republican yielded a pint each of cherries. Montmorency and Wragg set an abundance of fruit, but wet weather caused it to crack before ripening.

Peaches.—The varieties of peaches Alexander and Triumph bore fruit of inferior quality.

Plums.—None of the plum trees blossomed this year.

Pears.—The three pear trees, one Tyson and two Koonce, have shown no signs of fruitfulness at any time since they were planted at the station.

GRAPES

Grapevines of the variety Island Belle made a growth of 6 feet during the summer of 1927. They were protected with a covering of straw mulch during the following winter, but were frozen to the roots in the spring of 1928. New vines emerged in the summer and grew to a length of 6 feet. These vines were killed by the first fall frost of October 8.

SMALL FRUITS

Strawberries.—There are 591 varieties of strawberries under test at the station. (Fig. 2.) Hybrids Nos. 320 and 330 blossomed as early as May 2 and produced the first ripe berries. Hybrid No. 12083 was the latest variety to mature. Very few strawberries were harvested from any of the plats this year. Deer destroyed many of

the plants early in the spring, and robins took most of the fruit before it had a chance to mature.

Raspberries.—The total yield of raspberries was below normal. Robins proved to be destructive to raspberries as soon as the strawberry season was over.

Blackberries.—Two Logan plants (*Loganberry*) yielded 1 quart each of mature fruit. Only 50 per cent of the fruit matured. It was normal in size and texture, but very sour, and matured from September 1 to October 10.

Only one variety of blackberry, Himalaya Giant, is grown at the station. It began to blossom July 10, but the fruit did not mature.

Currants.—Currants yielded a normal crop. Holland (*Longbunch Holland*) was the highest yielder of the red varieties; White

FIGURE 2.—Experimental strawberry plats, Sitka station

Dutch, the highest yielder of the white varieties; and Prince of Wales, the highest of the black varieties.

Gooseberries.—Of the gooseberries, Champion was the most prolific variety. Pearl bore the largest berries, some of which measured more than an inch in diameter. Moist atmosphere caused a small percentage of the fruit to crack.

JERUSALEM ARTICHOKES

The White Jerusalem variety of artichoke was left in the ground all winter. The crop withstood the winter well and began to sprout as soon as the soil warmed up in early May. The tops grew 6 feet high and made excellent forage. The tubers have a high carbohydrate content and would make an excellent hog feed. The yield of tubers is rather low as compared with the yield of potatoes at Sitka.

VEGETABLES

Nearly all kinds of vegetables do well at Sitka. (Fig. 3.)

Asparagus.—A bed of Giant Washington asparagus produced several cuttings from May 5 to June 1. The yield was not large but the quality was good. A new bed was seeded to asparagus during the summer of 1927. Most of the young seedlings were heaved out of the ground by the repeated alternate freezing and thawing. The remaining plants made good growth this summer.

Beets.—Five varieties of beets were sown in the open May 24. The resultant crop was harvested October 16. The yield was lighter than in other years. Extra Early Egyptian was ready for the table July 24, and is the earliest beet grown at the station. Black Red Ball

FIGURE 3.—Vegetable plats, Sitka station

made a higher yield than any other variety, and New Oval Gem ranked the highest in quality.

Broccoli.—The seed of two varieties of broccoli was sown in the hotbed May 1, and the resultant plants were transplanted to the open June 14. The Riviera variety headed August 15. In quality it was fairly good, but the heads ran to seed soon after maturing. Curtis Nine Star Perennial did not head. It should be ready to head next summer.

Brussels sprouts.—Dalkeith, a tall variety, and Long Island, a dwarf variety, were transplanted to the open June 14. Both made low yields. Dalkeith yielded about 15 per cent of heads, and Long Island 20 per cent of small heads. The quality of both varieties was good.

Cabbage.—Nine varieties of cabbage were tried at the station this season. Succession, a medium variety possessing large, flat heads,

outyielded all others and produced at the rate of 10½ tons per acre. Earlykrop, an early roundheaded variety, was second, and Perfection Savoy, a crumpled-leaved variety, third. Red Dutch and Mammoth Rock Red yielded only small heads. The quality of all the varieties was excellent.

Chinese cabbage.—The varieties of Chinese cabbage Pe-Tsai and Wong Bok were sown in the open June 1, July 1, and August 1. The plants of the first two seedings were badly attacked by root maggots. They ran to seed before maturing. The plants from the seed sown August 1 made very slow growth. August 1 proved to be too late for planting, especially this summer. Both the yield and quality of the cabbage were poor.

Cauliflower.—Three varieties of cauliflower, Snowball, Gilt Edge Erfurt, and Dry Weather, were tried at the station and made yields

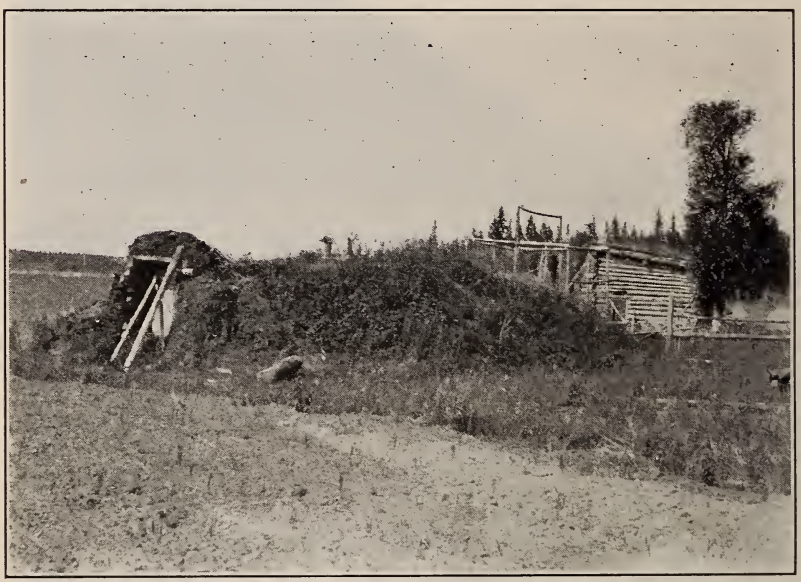

FIGURE 4.—Root cellar near Matanuska

below normal. Dry Weather was the first in productiveness, followed closely by Gilt Edge Erfurt. In quality of heads, each variety was good.

Carrots.—Five varieties of carrots were sown in the open May 24. Of these, Danvers Half Long made the highest yield, producing at the rate of 10 tons per acre. Coreless was second in production, yielding over 7 tons per acre. Carrots will keep when stored provided they are packed in dry sand in the root cellar, where the temperature is kept at about 36° F. (Fig. 4.)

Celery.—The varieties of celery Golden Plume and Early Self-Blanching were sown in the hotbed May 1. The plants developed slowly and failed to mature stalks.

Celeriac.—The variety of celeriac Snowball was unsuccessfully tried. It was planted at the same time as the celery.

Chives.—Chives has proved to be very hardy at Sitka, and it withstands the winters well without protection.

Endive.—Golden Heart endive, sown in the open June 1, was ready for the table August 1. Golden Heart endive makes a desirable salad plant, but it may also be boiled for use as greens. The quality can be improved by tying the leaves of the heads up around the heart of the plant to blanch the interior leaves.

Horseradish.—Horseradish does well in southeastern Alaska. The roots can be left in the ground from year to year without danger of their being winterkilled.

Kale.—Two varieties of kale, Dwarf Green Curled Scotch and Brown German Curled, were planted in the open June 15. Both varieties did equally well. Kale makes an excellent winter vegetable, and its flavor is improved by a touch of frost. It may be left in the ground and cut as needed. Kale also makes a desirable green feed for laying hens during the winter.

Kohlrabi.—Three varieties of kohlrabi were grown at the station. All did equally well and produced a normal crop. These were very tender and had a delicate flavor. Successive sowings should be made because old-standing crops become fibrous and woody.

Leek.—Both varieties of leek, Large American Flag and Musselburgh, did fairly well, but failed to attain their usual full size.

Lettuce.—Six varieties of lettuce were sown in the open May 24. Grand Rapids leaf lettuce did extra well and was ready for cutting by July 10. New York was the leading head lettuce, followed by Delicacy. The latter withstood the wet season better than any other kind. Krispheart headed well, but in quality was inferior. Butternut ran to seed and produced no heads. Crispy Cos did fairly well, but was too coarse to permit favorable comparison with the usual head varieties.

Onions.—Seed of four varieties of onions—White Portugal, Southport White Globe, Yellow Globe Danvers, and Española—was sown in the open May 24. Of these, Southport White Globe produced the highest yield. All the varieties remained small, because of the prevailing cool, wet season. However, they made delicious young onions. The small bulbs of White Portugal are very desirable for use as pickles. Some perennial onions are grown at the station mainly for the purpose of propagating sets. These do not winterkill when they are left in the ground.

Parsley.—Three varieties of parsley were grown at the station. Of these, Emerald and Champion Moss Curled are used for garnishing, and Hamburg, or the turnip-rooted variety, is principally grown for its large roots, which resemble parsnips. The roots are especially valuable for flavoring soups. All three varieties did equally well.

Parsnips.—Seed of the varieties of parsnips Hollow Crown and Improved Guernsey was sown May 24, and the vegetable was ready for table use September 1. The larger part of the crop was left in the ground to permit the frost to improve its quality and flavor.

Peas.—Six varieties of garden peas—Alaska, Blue Bantam, Mammoth Melting Sugar, New Jubilant, Prosperity, and Quite Content—were planted May 14. Of these, Alaska proved to be the earliest, and it was ready for table use July 30. Most of the pods of the Alaska pea mature at the same time and for this reason are very desirable for canning. Blue Bantam, a dwarf variety, required little or no support. The pods are large, but all are not as well filled or as prolific as the tall varieties. Mammoth Melting Sugar produces

broad, tender pods. The whole pods can be used as a vegetable. The latter three varieties, in the order named, proved to be of merit, and Quite Content was the highest in production.

Radishes.—The seed of six varieties of radishes was sown at 2-week intervals from May 1 to August 1. Root maggots attacked the lot sown in May. The best radishes were obtained from the seedings made between June 5 and July 17. Later sowings proved to be too slow in developing. White Icicle was the best variety grown. Long Black Spanish, a winter variety, was also grown.

Rutabagas.—The varieties of rutabaga Golden Heart and Purple Top Yellow were sown June 1 and harvested October 12. They made a rather low yield, but were of good quality.

Spinach.—Three varieties of spinach—Victoria, Long Season, and Thick-Leaved—were sown May 1, June 1, and August 1. The first seeding was a failure because the soil remained cold and wet from the excessive rains. All three varieties sown June 1 did fairly well. Victoria was in the lead, as it stood longer before running to seed than did the other two. The sowing of August 1 proved to be too late.

Swiss chard.—Swiss chard is a good substitute for spinach, and in most instances is more satisfactory because it makes good greens throughout the summer and does not run to seed. The varieties Green Plume and Fordhook Giant were grown. The latter produced the largest leaves and the highest yield.

Tomatoes.—A few tomato plants were planted in the coldframe in the old propagating house June 1. They made good growth and arrived at the blooming stage, but bore no fruit.

Turnips.—The seed of four varieties of turnips—Purple Top, Golden Ball, Amber Globe, and Petrowski—was sown June 1, and the crop was harvested September 17 and 20. Amber Globe yielded at the rate of 10¼ tons per acre, and Petrowski at the rate of 10 tons. Petrowski alone was free from root-maggot attack. Tobacco dust and creolin solution were used to keep the maggots in check. The Petrowski is a desirable turnip and can be successfully grown in almost any part of Alaska.

HERBS

Fennel.—The seed of Florence fennel was sown in the open June 1. The part just above the base is edible. Fennel makes an excellent salad and is also boiled for use as a vegetable. In flavor it is sweet and aromatic. Fennel was ready for use September 1.

Mint.—Mint grows well at the station. Undoubtedly it can be grown in southeastern Alaska with very little attention.

POTATOES

Twenty hills each of 106 varieties of potatoes were planted to determine their comparative value in developing a variety that shall be suitable to southeastern Alaska. Of these, 27 were commercial varieties and 79 were seedlings from seed balls originating at the station. Of the leading commercial varieties, Red River Triumph yielded at the rate of 500 bushels per acre, Green Mountain 484 bushels, and Gold Coin Station 468 bushels. Of the station seedlings, Imogen yielded at the rate of 468 bushels per acre, which was the highest recorded yield made by a seedling; and it was closely followed by Jean and by No. 1489, each of which produced at the rate of 404 bushels per acre.

Most of the potatoes tried at the station are of the early and intermediate type. Only a few late kinds are grown. The potato vines usually remain green up to the time of maturity unless they are killed by frost. All the potatoes tested proved to be mealy and of good flavor when they were boiled. Baking somewhat destroys these qualities.

FLORICULTURE

The object of the floriculture work is to obtain information of value in landscape gardening for the various owners of property in southeastern Alaska. Many varieties of annuals and perennials, as well as shrubs and bulbs, were tested during the year. Both annuals and perennials of many varieties are grown successfully. Bulbs can be grown without difficulty.

GENERAL CROP WORK

A number of varieties of field crops were planted in trial plats at the Sitka station this year. The results obtained indicate that only a small number of them can be grown successfully in southeastern Alaska.

The variety of wheat, Siberian No. 1, was sown broadcast May 25. The crop grew 3½ feet tall and formed heads. The grain was about 75 per cent mature when it was cut, October 1.

Canadian oats grew 4 feet tall, produced very stiff straw, and was about 80 per cent mature when the crop was cut, September 20.

Hull-less barley made good heads and was about 90 per cent mature when the crop was cut, September 8.

Common vetch did well, especially where it was sown with oats.

Canadian field peas made very rank growth and were in bloom to October 10. They should be sown with oats to prevent lodging or decaying of the vines. When plowed under, the peavines are valuable as a green manure.

The Early Wilson Black variety of soybean was sown May 25. Climatic conditions evidently were not suitable for soybeans, as they turned yellow and made very little growth.

Cowpeas were a complete failure. They made little headway after emerging, and finally turned yellow and ceased to grow.

Brome grass seed germinated well, but the plants remained short. The stand was not very satisfactory.

Japanese millet was sown on a small plat, but was not a success because of the wet ground.

White clover was sown on poor hillside land for the purpose of enriching the soil when plowed under and to check soil erosion. This clover is growing well and unless it winterkills can probably be established permanently. Alsike clover was not successful. Crimson clover grew sparingly. It bloomed in August, when the plants were only 8 inches tall.

Canadian bluegrass was sown mixed with white clover on a rolling hillside for pasture. The grass grew fairly well, and from all indications will make good pasturage next year.

Four plants of strain No. 11902 of timothy were obtained from the timothy breeding station at North Ridgeville, Ohio, for trial. They had an average height of 3½ to 4 feet September 24. Each plant produced an average of 34 stalks, and the heads had an average length

of 1¾ inches. No new heads formed after September 24. Four plants of strain No. 12421 grew to a height ranging from 2½ to 4½ feet. Each plant produced an average of 14 stalks. The heads averaged 2½ inches long. New heads were forming September 24, and some were in bloom. The plants were planted in average soil and made a good healthy growth, but rather short heads. This variety appeared to be later than No. 11902.

FAIRBANKS STATION

WEATHER CONDITIONS

The minimum temperature for 1927–28 was −50° F. Spring came early and the snow had disappeared from the south slopes by April 23. Warm weather caused the soil to dry rapidly, and preparation for seeding was begun May 7. As a whole, the season of 1928 was favorable for crop production. The last killing frost in the spring occurred May 30, and the first killing frost in the fall occurred September 3. This gave a frost-free period of 95 days, which is 5.4 days below the average. Killing frosts occurred in a few low areas July 21 and 22. The summer was cool, and there were many cloudy days. However, the frequent rains during the greater part of the growing season and the many hours of daylight caused a remarkable growth of all adapted crops. The maximum temperature of 88° occurred in June. The total precipitation for the year was 8.9 inches, 3.9 of which fell during the growing season. Profitable crop production with this small amount of rain is possible because the amount of evaporation is small. A dry period prevailed during the latter part of July and the first part of August, and checked the yield of vegetables, potatoes, and forage crops. Cereal grains matured rapidly during this period. Rainy weather later in August delayed the harvesting of grain crops.

MISCELLANEOUS FIELD CROPS

The yield of cereal crops was normal, whereas that of potatoes was far below normal. Oats yielded at the average rate of 33 bushels per acre, barley at the rate of 23.8 bushels, wheat at the rate of 31.3 bushels, and potatoes at the rate of 85.8 bushels. The potatoes were planted on land that had been previously devoted to cereal crops for several years. Infertility of the soil and drought during the latter part of August caused the yields to be extremely low.

Peas for canning made excellent growth. Except for the dry period during late July and early August, the season was very favorable to the crop. The early growth was rapid. A south-slope field was planted with the variety Alaska, May 15. (Fig. 5.) The plants emerged May 30, blossomed June 18, and were ready for harvesting for a local cannery July 18, 63 days after date of planting. Peas in another field, seeded June 25, blossomed August 3, and reached the canning stage August 20, which was 55 days after date of planting. The station has no viner and, therefore, could not approximate the yield of canning peas obtained.

Canadian field peas, planted May 21, emerged June 2 and were in blossom July 12. Field peas are well adapted to the comparatively cool season of this region, and can be profitably grown for grain, hay, silage, soiling, and green manuring.

FORAGE CROPS

Alfalfa.—Yellow-flowered alfalfa (*Medicago falcata*) overwintered well and began growth early in the spring. Probably the chief objection to this alfalfa is its slow growth and correspondingly low yield. On June 27 the stand was 17 inches high, and on July 9, though at a fourth of the blooming stage, it was only 18 inches high. The estimated yield then was three-fourths ton per acre. Two rows were harvested July 11 in order to determine the second-crop growth. At the time of the first killing frost, September 3, the second growth was 8 inches high. No seed ripened on account of the cool cloudy season. The yellow-flowered species bears seeds in straight pods which dry out upon ripening and freely scatter the seed.

Cross-pollinations were made several years ago in the hope of developing a variety combining the winter hardiness of the yellow-flowered alfalfa with the rapid growth and the curved seed pod characters of Grimm. Several variants of this cross have overwin-

FIGURE 5.—Experimental plats. Canning peas and grain, Fairbanks station

tered well, and they made strong, rapid growth during the summer. The seed pods are intermediate between the almost straight or sickle-shaped pod of the *M. falcata* and the coiled pod of Grimm. No seed matured this year.

Practically all the plants of the Perkins Hybrid, Orenberg, Grimm, and Cossack varieties from seedlings in 1926 winterkilled. A few of the plants which survived the two winters made good growth this year. No seed matured.

Clover.—Red clover was seeded May 14 in rows two rods long on south-slope land and made rapid growth throughout the summer. The plants were in bloom when they were 18 inches high August 3. By September 10 one-fourth of the number of heads was brown, but the seed was immature and was killed by the frost. Examination of the roots showed the presence of a few nodules.

Alsike clover was seeded in short rows May 14. Germination was good, and the plants were up by June 7, grew rapidly throughout the summer, and were in bloom August 4, when they were 20 inches high.

By September 10 approximately one-fourth of the number of heads had turned brown, but seed failed to ripen.

Biennial white sweetclover was seeded in two short rows May 14. The plants made rapid growth and were 24 inches high by July 26, at which time they began to bloom. At the time of the first killing frost, September 3, the plants were 36 inches high. They produced an abundance of seed pods, but the seed did not ripen. Examination of the basal buds showed them to be very poorly developed. The coming winter will test the hardiness of the crop.

Soybeans.—Minnsoy soybeans, a very early variety from Minnesota, made slow growth and did not bloom. At the time of the frost, September 3, the plants were 18 inches high.

Peas.—Field peas are well adapted to the climate of Fairbanks, although in some years their growth is checked by dry weather. The past season was favorable to the crop, and the Canadian, Golden Vine, and Mexican varieties made very rapid growth.

Vetch.—Perennial vetch (*Vicia cracca*) overwintered well and grew rapidly. It is well adapted to Fairbanks and appears to be a very desirable forage plant. This year it was 1 foot high by June 8, and was in bloom July 10 when 3 feet high. The estimated yield at this stage was 2 tons per acre. It is fine stemmed, leafy, and much relished by livestock. Because of the tendency of the vetch to lodge, it should be sown with a light mixture of grass. Examination of the roots showed them to bear many nodules. The crop produced many seed pods, and the seed was ripe before frost.

Bromegrass.—Bromegrass, seeded several years ago, survived the winter practically 100 per cent. This season the early growth was very rapid, and by June 16 the crop was heading out when 2½ feet high. The estimated yield at the full-bloom stage, June 27, was 1½ tons per acre. Bromegrass forms a thick, even sod and is well adapted for use as hay and pasture.

Timothy and slender wheatgrass.—Seeded in short rows, timothy and slender wheatgrass made good growth.

Sunflowers.—A hybrid variety of sunflower was grown on the same plat occupied by Russian Mammoth, for comparison. The hybrid variety is much the earlier of the two and was in bloom July 23, when 4 feet high. The seed was still immature at the time of frost. Russian Mammoth is a much taller growing variety and produces a much larger tonnage of green material per acre than does the hybrid. When killed by frost, Russian Mammoth was 6 feet high and had an estimated yield of 8 tons per acre. Further tests are necessary to determine the practicability of growing this crop for silage.

GRAIN CROPS

Oats.—Thirteen varieties of oats were each sown on a fortieth-acre plat May 11. Prior to being sown the seed was treated with formaldehyde for smut control. Germination was rapid, and all the varieties emerged by May 22. The stands were poor and lacking in uniformity. Early growth was rapid, and the early varieties were headed by July 3. The early varieties matured the first week of August and were harvested August 9.

Barley.—Fourteen varieties of barley were sown on May 10 for comparison. The resulting seedlings emerged May 21. Pamir, a dwarf variety, was headed by June 25. The plants were 18 inches high when mature.

Wheat.—Romanow, a tall, awned variety which originally came from Russia, made the highest yield—40.9 bushels—of the wheats. The crop was sown May 9 and was mature August 20. Chogot, a very early awned variety which was obtained originally from Siberia, matured in 90 days from the date of seeding, and yielded at the rate of 26 bushels per acre. Red Bobs required 103 days to mature and yielded at the rate of 39.4 bushels per acre.

Table 2 gives the results of varietal tests with oats, barley, and wheat:

TABLE 2.—*Results of varietal tests of grain at the Fairbanks station, 1928*

Variety	Date seeded	Date headed	Date matured	Length of time from seeding to maturity	Height of plants	Yield of grain per acre	Remarks
				Days	*Inches*	*Bushels*	
Oats:							
Hybrid No. 25	May 11	July 3	Aug. 4	85	30	28.1	Spreading panicle.
Hybrid No. 25a	do	do	do	85	27	23.5	Do.
Kanota	do	do	Aug. 6	87	29	24.8	Do.
Canadian	do	July 6	Aug. 7	88	28	31.5	Do.
Kherson (yellow)	do	July 3	do	88	25	32.5	Do.
Kherson (white)	do	do	do	88	27	30.9	Do.
Wisconsin Wonder (Wisconsin No. 1)	do	July 7	Aug. 9	90	28	38.6	Do.
Leader	do	July 8	Aug. 12	93	29	37.3	Side panicle.
Twentieth Century	do	July 6	do	93	28	37.7	Do.
Alaska Black	do	July 9	Aug. 14	95	30	35.9	Do.
Victory	do	July 8	do	95	27	40.0	Spreading panicle.
Heavyweight	do	July 6	Aug. 17	98	29	32.3	Do.
State Pride (Wisconsin No. 7)	do	July 7	do	98	29	36.5	Do.
Barley:							
Pamir	May 10	June 25	July 31	82	18	12.4	Awned; 6-rowed, hulled.
Hansen	do	July 1	Aug. 3	85	33	24.9	Do.
Trapmar	do	July 4	Aug. 7	89	37	33.3	Hooded; 6-rowed, hull-less.
Boehme	do	do	do	89	28	25.6	Do.
Manshury	do	do	do	89	38	31.9	Awned; 6-rowed, hulled.
Minnesota Pedigree	do	do	do	89	38	24.0	Do.
Hybrid No. 14a	do	do	do	89	36	17.3	Hooded; 2-rowed, hulled.
Hybrid N. D	do	July 1	Aug. 8	90	30	13.1	Smooth-awned; 6-rowed, hull-less.
Hybrid No. 68e	do	July 5	do	90	34	23.7	Awnless; 6-rowed, hull-less.
Meloy	do	July 13	Aug. 12	94	27	26.8	Hooded; 6-rowed, hulled.
Hybrid No. 68d	do	July 5	do	94	34	19.9	Awnless; 6-rowed, hulled.
Eagle	do	July 9	do	94	37	20.4	Awned; 2-rowed, hulled.
Hybrid No. 14	do	July 6	Aug. 17	99	40	28.3	Do.
Hybrid No. 28	do	do	Aug. 25	107	40	31.1	Do.
Wheat:							
Chogot	May 9	June 29	Aug. 7	90	34	26.0	Awned.
Tulin	do	June 30	Aug. 9	92	33	27.6	Do.
H. G	do	do	Aug. 11	94	30	28.9	Do.
Wisconsin Wonder	do	June 29	Aug. 15	98	32	23.7	Do.
Ruby	do	June 30	Aug. 16	99	35	28.7	Awnless.
Hybrid No. 100	do	July 1	Aug. 18	101	34	31.2	Awned.
Hybrid No. 63	do	July 3	do	101	35	32.7	Do.
Hybrid No. 63a	do	July 2	do	101	33	26.3	Do.
Hybrid No. 24	do	July 6	do	101	38	36.2	Do.
Hybrid No. 100t	do	July 2	do	101	34	30.6	Awnless.
Hybrid No. 101	do	do	do	101	35	27.2	Do.
Hybrid No. 30	do	July 3	do	101	39	34.0	Do.
Marchoser	do	July 1	do	101	40	37.7	Do.
Kota	do	July 3	Aug. 20	103	41	27.6	Awned.
Garnet	do	July 1	do	103	35	31.3	Awnless.
Red Bobs	do	July 3	do	103	35	39.4	Do.
Hybrid No. 100	do	July 2	do	103	34	33.0	Do.
Romanow	do	July 6	do	103	42	40.9	Awned.

Cereal introductions and crosses.—A number of new varieties of cereal grains, introduced from various State experiment stations and from foreign countries, were sown in rows to determine their merits under Alaskan conditions. Seed which was produced as the result of the crosses made in the summer of 1927 was sown, and each resultant hybrid was studied. Other crosses were made this season for further testing.

POTATOES

Fourteen varieties of potatoes were grown for comparison as to earliness and yield. About three weeks before the tubers were planted they were immersed for 1 hour in a solution of corrosive sublimate (4 ounces dissolved in 30 gallons of hot water) for scab control and placed in a well-lighted room to sprout. Each variety was planted in duplicate May 19, in two 132-foot rows 3 feet apart. Most of the plants emerged by June 15. The soil on which the potatoes were planted was poor, its fertility having been exhausted by the continuous cropping of oats for forage. Although there is a slight slope to this field, it is low, and the frost of July 21 and 22 killed the upper half of the plants. The yields were consequently extremely low. The tubers were of excellent quality. All the varieties were harvested September 18. Table 3 gives the comparison in yield of the varieties.

TABLE 3.—*Comparison in yield of 14 varieties of potatoes at the Fairbanks station, 1928*

Variety	Yield per acre	Remarks	Variety	Yield per acre	Remarks
	Bushels			*Bushels*	
Irish Cobbler	91.4	White tubers.	Jean	85.3	White tubers.
Irish Cobbler S	77.0	Do.	American Wonder	64.7	Do.
White Harvest	94.1	Do.	Eureka	71.8	Do.
Etta	86.8	Do.	Early Ohio	68.1	Pink tubers.
June	83.4	Do.	Ohio jr	98.4	Do.
Alice	63.5	Do.	Burpee's Superior	105.2	Do.
Kate	134.9	Do.	Alaska Beauty	77.6	Purple tubers.

VEGETABLES

Carrots, parsnips, beets, radishes, turnips, rutabagas, celery, spinach, Swiss chard, lettuce, peas, sweet corn, onions, cabbage, cauliflower, Brussels sprouts, tomatoes, cucumbers, and rhubarb were grown on a rich plat of south-slope land near the propagating house. Plants of cabbage, cauliflower, Brussels sprouts, tomatoes, cucumbers, and celery were started early in the propagating house and transplanted to the open June 1. The other vegetables were planted in the open May 8.

Nearly all the common vegetables grow with remarkable rapidity in this part of Alaska. The weather was favorable to growth during the past season, and the quantity and quality of the vegetables were excellent. Sweet corn grew very slowly and produced no ears. Some plants of the early Minnesota sweet corn were started in the propagating house and later transplanted to the open. They grew to a height of about 4 feet and tasseled, but did not produce ears. Rhubarb made rapid growth and was ready for table use May 23. The stalks were large and of excellent quality. Radishes and lettuce were of edible size June 10. Root maggots were very troublesome to radishes.

Turnips, beets, and carrots grew luxuriantly and were large enough for table use by the latter part of June. Turnips weighing 10 pounds each were harvested in September. Cabbage and cauliflower grew rapidly and produced large heads of excellent quality. Brussels sprouts did very poorly and produced no sprouts. The other vegetables came on in season and did well.

BERRIES

The Cuthbert raspberry overwintered well and produced a large yield of fine, sweet berries. The rows were heavily mulched with straw in the fall of 1927, and the early growth of the canes was rapid. Cuthbert is an excellent variety for this part of Alaska.

Strawberries yielded very poorly, owing probably to the fact that the plants had been weakened by the dry season of 1927. The plants began blooming June 12, but set very little fruit. The first ripe berries were harvested July 9. They were small, but of good quality.

FIGURE 6.—Yak-Galloway cow, hybrid No. 2, Fairbanks station

CATTLE

The yak-Galloway crossbreeding work is making favorable progress. The cattle at the station now number 1 yak bull and 1 yak cow, which were received from Canada in 1919 and 1923, respectively; 4 Galloway cows, Fidelia Fair, which was produced at the station, and Nos. 319, 320, and 324, which were transferred from the Kodiak station in 1928; 3 Galloway calves, No. 0327, which was dropped June 12, 1928, by Galloway No. 320, No. 0328, which was dropped June 26, 1928, by Galloway No. 319, and No. 0329, which was dropped July 18, 1928, by Galloway No. 324; and 9 yak-Galloway hybrids. Hybrids Nos. 1, 2 (fig. 6), and 3 are females, each 4 years old. Hybrid No. 4, a male, is 3 years old. Hybrid No. 5, also a

male, is 2 years old. All these hybrids were sired by a yak out of a Galloway cow. Hybrid No. 6 (fig. 7), a female, is 2 years old and is the product of a cross between a yak and Hybrid No. 1. Hybrid No. 7, a female, is 1 year old and was sired by a Galloway out of a yak cow. Hybrid No. 8, a female, is 1 year old and is the result of crossing a Galloway with Hybrid No. 1. Hybrid No. 9, a female, is 6 months old and was sired by a yak out of a Galloway cow.

The Galloway bull died June 24, 1928, and Galloway cow No. 323 died July 24, 1928, while on pasture. The animals were apparently in good health the day before their death. It is thought that death resulted from their having eaten poisonous larkspur.

FIGURE 7.—Yak-Galloway cow, hybrid No. 6, Fairbanks station

Five Galloway cows were transferred from the Kodiak station for use in increasing the number of yak-Galloway hybrids at the Fairbanks station. Of these cows, one died, as noted above, and one was later transferred to Lignite for use there in a grazing experiment. Hybrid No. 4, a male, was found to be sterile. Hybrid No. 5, also a male, will be tested for fertility the coming year.

MILK PRODUCTION RECORDS

A record was kept of the milk production of a Galloway cow and a yak-Galloway hybrid for purposes of comparison. The average daily milk production for the Galloway cow, Fidelia Fair, was 10 pounds. This covered one entire lactation period and part of another. The dates of calving were April 13, 1927, and April 4, 1928. The milk had a butterfat content of 4.7 per cent. The average daily milk production of the yak-Galloway, Hybrid No. 1, was 10.5 pounds.

This covered one lactation period. The date of calving was November 6, 1927. The milk had a butterfat content of 6 per cent. Table 4 gives the milk yield per day and per month of these cows for the period beginning in April, 1927, and ending in September, 1928.

TABLE 4.—*Comparison of milk yield for the period April, 1927, to September, 1928, of a Galloway cow and a yak-Galloway hybrid at Fairbanks station*

Month	Milk yield of Galloway cow (Fidelia Fair)		Milk yield of yak-Galloway (Hybrid No. 1)	
	Total	Daily average	Total	Daily average
1927	*Pounds*	*Pounds*	*Pounds*	*Pounds*
April	176.0	12.5		
May	554.0	18.0		
June	531.0	17.7		
July	471.0	16.0		
August	418.5	13.5		
September	315.5	10.5		
October	275.5	8.9		
November	194.0	6.5	318.0	14.5
December	166.0	5.4	431.0	13.9
1928				
January	145.5	4.7	395.5	12.8
February	110.5	3.8	350.0	12.1
March	7.0	1.4	327.0	10.5
April	295.5	13.4	303.5	10.1
May	378.5	12.8	286.5	9.2
June	319.0	10.6	323.5	10.8
July	278.0	9.0	304.0	9.8
August	192.0	6.2	250.0	8.0
September	171.5	5.7	170.5	5.7
Total	4,999.0		3,459.5	

STATION IMPROVEMENTS

Weather instruments for obtaining evaporation data were received from the United States Weather Bureau and properly installed.

An additional area of 280 acres of land was reserved for the experiment station for use as pasture for the yak-Galloway bybrids. The tract joins the present reserve on the southwest. It has a fine stand of native grass, and the creek which flows through it furnishes an ample supply of water for the livestock.

MATANUSKA STATION

WEATHER CONDITIONS

At the Matanuska station the total snowfall of the winter was 30 inches and reached its maximum depth in February. All the snow had disappeared from the fields by April 15. Temperature and rainfall for April and May were normal. The mean temperature for June was 50.4° F., which was 4.5° below the average for the past nine years. The amount of sunshine in June was normal, but the low temperature was reflected in the slow growth of potatoes, artichokes, clover, cabbage, and rutabagas. The growth of cereal grains and native grasses was not affected adversely by the weather.

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Fall-plowed land was ready for working May 5, and stubble land was ready for plowing May 8. All fields were "cultipacked" (fig. 8) immediately after they were seeded to conserve moisture. Much windy weather during the early seeding period caused the moisture in spring-plowed fields to evaporate to such an extent as to retard until late June the germination of shallow-planted seed, including clover, alfalfa, and root crops. Clover and alfalfa plats had to be reseeded.

Sufficient rain fell June 22 to provide mositure for the early growth of grain crops, but the prolonged cloudy weather caused the crops to mature slowly. Frosts occurred September 13, 14, and 17, and damaged potatoes and grains on the lowlands. Little damage was done to crops on the bench lands at this time.

FIGURE 8.—Cultipacker, Matanuska station

The season was favorable for growing peas and vetch for hay and silage, but was too short to permit ripening of the seed of these crops. The late varieties of cereal grains and potatoes failed to mature.

FEEDING VALUE OF SOME LOCALLY GROWN FORAGE CROPS

In continuation of work started in 1927,[1] 6-pound samples each of common barley, oats, and a swamp sedge (*Carex cryptocarpa*) were cut at weekly intervals, stored in a dry place until they showed a constant moisture content, and analyzed for the usual feeding-stuffs data. Two samples of the silverberry bush (*Elaeagnus argentea*) also were analyzed. The Bureau of Chemistry and Soils, United States Department of Agriculture, made the determinations. The cooperation of the bureau in this undertaking is gratefully acknowledged. Table 5 gives a description of the samples and the results of the analyses.

[1] ALBERTS, H. W. REPORT OF THE ALASKA AGRICULTURAL EXPERIMENT STATIONS, 1927, p. 15. U. S. Dept. Agr., p. 40, illus., 1928.

TABLE 5.—*Analyses of some locally grown forage crops, cut weekly at the Matanuska station, 1928*

Sample No.	Date of harvesting	Height of plants	Description of sample	Water	Fat	Crude fiber	Protein N× 6.25	Ash	Nitrogen-free extract
Sedge:		*Inches*		*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
1	May 17	5 to 8	10 per cent heads breaking from boot.	5.00	1.57	28.07	13.50	5.92	45.94
2	May 31	8 to 10	90 per cent heads out of boot; 50 per cent heads in bloom.	4.87	1.66	28.46	13.60	5.94	45.47
3	June 7	10 to 16	90 per cent heads in bloom; no seeds formed.	4.90	2.67	31.85	11.95	5.68	42.95
4	June 21	12 to 22	Full bloom; 20 per cent heads showing seed formation.	4.76	1.65	29.26	12.75	5.02	46.56
5	June 28	16 to 25	25 per cent seed formed; 50 per cent heads still in bloom.	4.86	1.63	29.35	12.75	5.04	46.37
6	July 5	16 to 30	No change in bloom or in seed formation stage.	4.93	1.87	30.50	12.25	5.39	45.06
7	July 12	25 to 35	40 per cent seed formed	4.51	1.67	30.38	11.07	4.89	47.48
8	July 19	25 to 35	50 per cent seed formed	4.72	1.78	31.84	10.33	5.31	46.02
9	July 26	30 to 36	60 per cent seed formed; leaves growing beyond head.	5.01	2.15	32.06	9.14	4.89	46.75
10	Aug. 2	30 to 36	75 per cent seed formed	4.61	1.86	32.57	8.75	4.96	47.25
11	Aug. 9	35 to 40	80 per cent seed formed; turning brown.	5.64	1.87	34.24	8.85	4.84	44.56
12	Aug. 16	35 to 40	50 per cent seeds brown	5.63	2.02	32.25	8.35	4.86	46.89
13	Aug. 23	35 to 40	Seed ripening; 25 per cent dropped.	5.59	2.02	32.42	8.35	5.45	46.17
14	Aug. 30	35 to 40	35 per cent seed dropped	5.03	2.64	27.05	7.38	5.76	52.14
15	Sept. 6	35 to 40	Seed fully ripe; leaves turning brown.	5.15	2.62	33.46	7.60	4.97	46.20
Barley: (Hybrid No. 19b):									
1	June 28	3 to 6	50 per cent plants started to joint.	6.77	3.00	25.67	19.60	10.72	34.24
2	July 5	8 to 12	50 per cent showing heads in boot.	6.63	2.50	27.53	13.80	8.75	40.79
3	July 12	12 to 15	25 per cent heads formed; 25 per cent in boot.	6.31	1.27	26.01	9.37	6.74	57.04
4	July 19	15 to 30	All heads out of boot; 50 per cent in bloom.	6.37	1.48	24.65	7.38	5.70	54.42
5	July 25	30 to 40	75 per cent reaching milk stage.	6.16	1.62	25.22	6.62	5.45	54.93
6	Aug. 2	30 to 40	Late milk stage	5.79	1.98	23.76	6.09	5.00	57.38
7	Aug. 9	30 to 40	Early dough stage	5.98	1.80	14.72	5.63	5.19	66.68
8	Aug. 16	30 to 40	Late dough stage; heads dropping, some leaves dropped.	6.26	1.75	20.51	6.74	5.00	59.74
9	Aug. 23	(1)	Lower third leaves dropped; leaves green at top.	6.17	1.89	20.16	5.94	6.01	59.83
10	Aug. 30	(1)	50 per cent leaves dropped	6.27	1.78	20.12	5.78	5.22	60.83
11	Sept. 6	(1)	75 per cent leaves dropped	5.89	1.71	21.97	5.44	5.63	59.36
12	Sept. 13	(1)	90 per cent leaves dropped	6.17	1.46	21.77	5.69	5.13	59.78
13	Sept. 21	(1)	5 per cent heads dropped; heavy frost.	6.22	1.46	25.38	5.94	5.09	55.91
14	Sept. 27	(1)	All leaves and 5 per cent of heads dropped.	6.29	1.37	19.61	6.40	4.91	61.42
Oats: (Swedish Select).[2]									
1	June 28	4 to 6	Growth retarded by lack of moisture.	6.68	2.90	20.33	14.20	10.11	45.78
2	July 5	8 to 12	Growth increasing; heads in boot.	6.46	2.03	23.77	8.56	7.92	51.26
3	July 12	15 to 20	50 per cent of heads breaking from boot.	6.04	1.70	27.43	8.25	7.08	49.50
4	July 19	15 to 25	95 per cent heads breaking from boot.	5.77	1.48	28.70	6.72	5.82	51.51
5	July 26	25 to 40	All heads out of boot and in bloom.	5.34	1.44	27.89	5.63	5.10	54.60
6	Aug. 2	35 to 40	Early dough, late milk, stage.	5.55	1.86	26.52	5.40	5.03	55.64
7	Aug. 9	36 to 44	Stiff dough stage	4.41	1.38	23.57	4.10	4.38	61.16
8	Aug. 16	36 to 44	Grain beginning to harden	5.16	2.36	25.50	4.00	5.03	57.95
Silverberry:									
1	Oct. 15	40	Seed pods from bush day after first killing frost.	6.68	4.77	24.6	11.37	3.32	49.26
2	Oct. 15	40	Upper 8 to 10 inches of bush, including leaves and seed.	6.11	1.87	20.87	13.57	4.64	52.94

[1] Ripe.

[2] Plat inadvertently cut for silage Aug. 20.

From the table it may be seen that these forage plants, like the native bluetop (*Calamagrostis* sp.) analyzed in 1927, showed a rather constant lowering of the protein content at weekly intervals. Barley and oats showed a decided tendency to increase in nitrogen-free extract as they developed. They also showed a decided loss in fat after the first two weeks, but thereafter the percentage remained fairly constant with perhaps a slight tendency toward diminution. However, this tendency was not particularly significant after the plants attained a height of 8 to 12 inches. The crude fiber in oats increased from the time the plants were 4 to 6 inches high until they attained a mature height. Crude fiber for barley, on the other hand, showed no especial tendency to increase or decrease during the growth of the plant. Nitrogen-free extract of the sedge showed some increase from the time the plant was 5 to 8 inches high until it reached maturity. This tendency, however, is neither regular nor progressively increased for the weekly cuttings during the growth period. The fat content gave marked evidence of increasing from the time the plants were 5 to 8 inches high until they fully matured. The crude fiber indicated a fairly constant increase until the seeds ripened. The ash content decreased only slightly until the seeds had fairly well formed, when it definitely decreased. Later when 25 per cent of the seeds had dropped, the ash showed a tendency to increase.

The marsh sedge (*Carex cryptocarpa*) is one of the important native forage plants of Alaska and very valuable from a nutritional standpoint. The plant should be cut not later than July 20 when it is to be used as silage, and an earlier cutting would give a higher percentage of protein, though possibly a lower acre yield. The sedge should be cut not later than August 10 when it is to be used as hay.

In protein and carbohydrates the barley and oats would seem to have a fairly constant feeding value over a considerable growth period as they approached maturity, but the table shows that the percentage content of the various elements varied considerably from week to week.

It is reported that livestock, particularly horses, were observed eating the silverberry bush during the fall and early winter. Two samples of this plant were analyzed—one of the seeds, and the other of the terminal 8 or 10 inches of the bush, including the woody portions and the leaves and seeds. The analysis indicated that the seed, the stems, and the leaves of this plant are nutritious. The stands of silverberry are not known to be heavy, but the plant is said to be widely distributed in Alaska and should prove to be a valuable supplement in the ration of animals running on the range.

The work of 1927–28 did not include palatability experiments, nor were data obtained on comparable yields. The investigations are being continued to ascertain the time of cutting for maximum yields and greatest palatability.

MISCELLANEOUS FIELD CROPS

Although fair yields were obtained from both fields and experimental plats, the yields made in the Matanuska Valley were below normal. This is true especially of the potato crop, which was only 50 per cent normal. Oats, grown on a 5-acre plat, produced at the rate of 41.8 bushels per acre. Barley, on a 3-acre plat, yielded at the rate of 20.2 bushels per acre. Wheat, on a 2-acre plat, yielded 17.4

bushels per acre. Potatoes, on a 1-acre plat, yielded at the rate of 138.8 bushels per acre. Rutabagas, on a 0.2-acre plat, produced at the rate of 5.2 tons per acre. Turnips, on a 0.1-acre plat, yielded at the rate of 22 tons per acre. Mangels, on a 0.05-acre plat, yielded at the rate of 11.4 tons per acre. Peas and oats for silage, on a 19-acre plat, produced at the rate of 5.3 tons per acre.

Vetch and oats for hay yielded at the rate of 2.4 tons per acre from a 9-acre plat. The vetch made an exceptionally heavy growth and caused the oats sown with it to lodge very much. The crop had to be cut one way with a mower. Two methods were used to cure the hay. In one method, the hay was cocked and protected with a covering of canvas as soon as the plats had wilted sufficiently. In the other method, thin-peeled stakes were sharpened at both ends and firmly driven into the ground. Each stake was 9 feet long. The partly cured hay was then piled loosely on the stakes. (Figs. 9 and 10.)

FIGURE 9.—Curing hay at Matanuska, utilizing stakes for the purpose

Weeds thrived throughout the summer notwithstanding the fact that cloudy weather prevailed, and required more attention than usual to suppress them. The clover plats had to be frequently mowed for weed control. Lamb's-quarters (*Chenopodium album*) was the most troublesome of the weeds.

Cutworm injury to crops was more severe than in average seasons. Fields that were plowed in the spring, or such portions of such fields as were adjacent to hillsides or banks covered with grass, were badly infested. Peas and oats where sown together were destroyed by the larvæ. They fed on the pea seedlings first, and on the oats later. Mangel seedlings on a 1-acre plat were almost totally destroyed.

Diseases reduced the yield of potatoes. Blackleg and Rhizoctonia were observed in nearly all the plats. Many of the plants were

attacked also by mosaic, or leaf curl, and by scab. Some varieties of potatoes suffered more severely than did others. All white varieties were practically free from vine disease.

GRAIN CROPS

Experimental-plat seeding of cereal grains was begun May 17 and completed May 19. Varietal tests were conducted with oats (9 varieties), barley (6 varieties), and spring wheat (9 varieties). Climax oats, Hybrid No. 19 barley, and Siberian No. 1 spring wheat were grown in the check plats. All cereal grains were grown on tenth-acre plats. Table 6 gives the results of the variety tests.

TABLE 6.—*Results of varietal tests of grain at the Matanuska station, 1928*

Variety	Date seeded	Date emerged	Date headed	Date matured	Length of time from seeding to maturity	Height of plants	Yield of grain per acre
					Days	*Inches*	*Bushels*
Oats:							
Golden Rain	May 17	May 27	July 14	Sept. 1	107	36	50.0
Climax	do	do	July 9	do	107	36	51.5
Twentieth Century	do	May 28	July 8	Aug. 30	105	36	51.8
Heavyweight	do	May 27	July 9	Aug. 31	106	35	43.7
Swedish Select	do	May 28	July 11	Sept. 7	113	39	46.5
Leader	do	May 29	July 14	do	113	46	54.0
Hull-less No. 51	do	do	July 17	Aug. 30	105	38	35.0
Hybrid No. 36	do	May 28	July 19	Sept. 7	113	42	34.7
Climax	do	May 27	July 9	Sept. 1	107	36	51.8
Abundance	do	do	July 14	Sept. 7	113	40	60.6
Barley:							
Hybrid No. 44	do	May 26	July 2	Aug. 25	100	34	21.0
Hybrid No. 19	do	May 27	July 8	Aug. 30	105	36	18.8
Hybrid No. 28	do	May 26	do	Aug. 28	103	34	14.1
Hybrid No. 14a	do	May 25	June 29	Aug. 20	95	38	17.0
Hybrid No. 20b	do	do	do	do	95	38	19.7
Hybrid No. 19	do	May 27	July 9	Aug. 27	102	36	23.0
Hybrid No. 19a	do	do	do	do	102	36	27.8
Hybrid No. 19	do	do	July 8	Aug. 30	105	36	15.3
Wheat:							
Tulun	do	May 29	July 3	Aug. 30	105	30	11.0
Siberian No. 1	do	do	July 4	Aug. 31	106	32	13.0
Irkutsk	do	May 27	July 3	Aug. 30	105	30	15.0
Romanow	do	do	July 9	Sept. 5	111	36	17.1
Omega	do	May 29	July 3	Aug. 30	105	32	12.3
Rampart	do	do	July 4	do	105	31	18.8
Hybrid No. 36	do	do	July 7	Sept. 5	111	34	14.0
Ruby	do	do	July 5	do	111	34	12.5
Red Bobs	do	do	July 6	Sept. 13	119	33	-------
Siberian No. 1	do	do	July 4	Aug. 31	106	32	16.5

POTATOES

Eight varieties of potatoes were grown in a comparative test May 26. White Bliss was used as a check. Bliss Triumph outyielded all the others. The seed tubers of this variety were obtained from the branch experiment station at Spooner, Wis. Table 7 gives the results of the test.

TABLE 7.—*Results of varietal tests of potatoes at the Matanuska station, 1928*

Variety	Date planted	Date emerged	Date of first blossoms	Length of time required to blossom	Yield per acre	Remarks
				Days	*Bushels*	
White Bliss	May 26	June 17	July 17	52	184.4	Medium vine growth.
Early Ohio	do	do	do	52	152.4	Do.
Alida	do	do	Aug. 3	69	197.8	Heavy vine growth.
Carter	do	do	July 23	58	187.5	Light vine growth.
Earliest of All	do	June 20	Aug. 2	68	233.2	Heavy vine growth.
Irene	do	June 17	July 14	49	182.1	Do.
Bliss Triumph	do	do	July 22	57	249.8	Medium vine growth.
White Bliss	do	do	July 17	52	144.4	Do.
Rural New Yorker	do	June 19	July 14	49	199.5	Heavy vine growth.

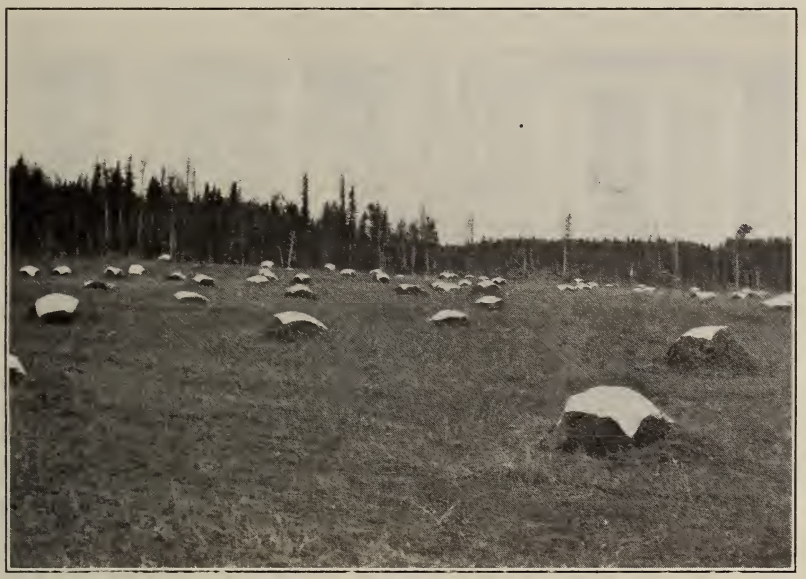

FIGURE 10.—Curing hay at Matanuska, utilizing canvas covers for the purpose

In an experiment made to determine the effect of date of planting on yield, potatoes were planted in rows of 10 hills each every 10 days, except June 14, from May 26 to July 9, inclusive. As was the case in the two years previous, the potatoes which were planted from May 25 to June 5 produced the highest yields. The lot planted May 26 emerged in 26 days, blossomed in 60 days, and yielded at the rate of 2.41 pounds per hill. The lot planted June 4 emerged in 20 days, blossomed in 53 days, and yielded at the rate of 2.9 pounds per hill. The lot planted June 25 emerged in 13 days, blossomed in 50 days, and yielded at the rate of 1.48 pounds per hill. The lot planted July 2 emerged in 11 days, blossomed in 46 days, and yielded at the rate of 0.76 pound per hill. The lot planted July 9 emerged in 10 days, blossomed in 50 days, and yielded at the rate of 0.35 pound per hill.

ROTATION PLATS

In a 5-year rotation of wheat, peas, barley, oats and vetch, and potatoes, in the order named, it was found that increased yields were obtained by having barley follow peas, and wheat follow potatoes.

In a 2-year rotation, in which peas were alternated with oats, the yield of oats was 55 bushels per acre on land previously planted with peas, as against 41 bushels per acre on land previously devoted to a cereal crop.

CATTLE

Two herds are kept at the station, a purebred Holstein herd, including 8 females and 1 bull, and a Holstein-Galloway crossbred herd, including 2 bulls, 9 cows, 8 heifers, and 5 calves. Satisfactory progress is being made in building up the Holstein-Galloway herd. Crossbred cow No. 16 produced 12,010.9 pounds of milk during her fourth lactation period of 365 days, and has probably the highest milk record

FIGURE 11.—Holstein-Galloway heifer, Matanuska station

in Alaska at the present time. Crossbred heifer No. 41 produced 7,318.7 pounds of milk during her first lactation period of 365 days. Other heifers of good conformation and excellent pedigrees give promise of becoming good producers in a few years. (Fig. 11.) Table 8 gives a comparison of the yield of milk and the lactation period of eight crossbred Holstein-Galloway cows at the Matanuska station in 1928

TABLE 8.—*Comparison in yield of milk of eight crossbred Holstein-Galloway cows at the Matanuska station, 1928*

Cow No.	Total milk yield	Daily average milk yield	Lactation		Cow No.	Total milk yield	Daily average milk yield	Lactation	
			Number	Period				Number	Period
	Pounds	*Pounds*		*Days*		*Pounds*	*Pounds*		*Days*
16 (F_1)	12,010.9	32.87	Fourth	365	34 (F_2)	8,087.4	22.15	Second	365
18 (F_1)	8,180.9	22.41	do	365	41 (F_2)	7,318.7	20.05	First	365
26 (F_2)	6,221.1	18.76	Third	331	44 (F_2)	6,253.2	17.56	do	356
31 (F_2)	8,649.2	23.69	Second	365	45 (F_2)	5,567.3	16.37	do	340

Feeding tests were made comparing the ability of the Holsteins and the crossbreds to make gains on home-grown feeds and on pasture. Two Holsteins and three Holstein-Galloway cows of approximately the same age were used in the test. In the home-grown feed test, they were fed a winter ration of oats and wheat straw, and oat-pea silage, supplemented with a limited amount of mangels and concentrated feed. The two Holsteins were 18 and 29 months old, respectively, and had an average weight of 920 pounds at the beginning of the test, January 1, 1928. They made a total gain of 115 pounds by April 4, 1928, which was an average gain per head of 57.5 pounds. The three crossbreds were 18 and 19 months old and had an average weight of 748 pounds at the beginning of the test, January 1, 1928. They made a total gain of 255 pounds by April 4, 1928, which was an average gain per head of 85 pounds.

In the other test the same cows were placed in pasture beginning June 1, 1928, and comparisons in weight were made September 31, 1928. The two Holsteins had an average weight of 977.5 pounds at the beginning of the test, and made a total gain of 290 pounds, which was an average gain per head of 145 pounds. The three crossbreds had an average weight of 840 pounds at the beginning of the test and made a total gain of 460 pounds, which was an average gain per head of 153⅓ pounds.

A feeding test covering a period of six weeks was made to determine the value of different rations for cows. Eight cows of nearly similar weight, age, and milk production, were used. They were divided into two lots. Lot 1 was fed daily 35 pounds of silage, 8 pounds of native hay, and 6 pounds of concentrated feed for each 1,000 pounds of body weight. The concentrated feed consisted of equal parts of ground oats and barley, and the silage was made up of one-third peas to two-thirds oats. Lot 2 received the same ration, except that 5 pounds of silage and 2 pounds of hay were replaced with 1 pound of linseed meal and 2 pounds of mangels. At the end of the sixth week the ration of the two lots was reversed for a second period of six weeks. The cows were weighed at the beginning of the test and every 15 days thereafter.

Lot 1 gained 25 pounds in weight per animal during the first period of six weeks and 105 pounds during the second period. Lot 2 gained 45 pounds per animal on the native-grown ration and 135 pounds on the ration containing linseed meal and mangels. Lot 1 produced 252 pounds more milk per animal on the linseed-mangel ration than on the home-grown ration, and lot 2 produced 356 pounds of milk more per animal on the same ration for the period.

The cost of the feed per day per 1,000 pounds of body weight was found to be 55 cents for the ration containing the linseed meal and the mangels, and 56 cents per day for the ration of native-grown feeds. The gain in weight of the animals and in milk production is strongly in favor of the ration containing the linseed meal and the mangels.

KODIAK STATION

CATTLE

Cattle-breeding work was continued at the Kodiak station. The herd of purebred Galloway cattle is kept to supply breeding stock for experimental work to the other stations. In April, five cows were

shipped from the Kodiak station to Fairbanks for use in increasing the yak-Galloway hybrids at that station.

The cultivated land at Kodiak is low in fertility, producing less than half a ton of hay per acre, and the station found it more economical to produce hay at Kalsin Bay. A quantity of hay, sufficient to keep the herd for the winter, was made at Kalsin Bay during the summer.

The station herd was transferred from Kodiak to Kalsin Bay in August and will be cared for by a man who has been temporarily employed for the purpose. The breeding work of the station is supervised by the animal husbandman of the Matanuska station.

FIGURE 12.—Unga village, Unga Island, showing topography of the vicinity

SURVEY OF THE GRAZING POSSIBILITIES OF THE ALEUTIAN ISLANDS AND VICINITY

In July, 1928, the director of the stations was requested to investigate and report upon the grazing possibilities of the Aleutian Islands and western Alaska in order to be able to advise with and give suggestions to prospective cattle and sheep raisers. The region includes a portion of the Alaskan Peninsula, the Aleutian Islands (fig. 12), and Kodiak Island, and is located between parallels 51° and 59° north latitude, and meridians 153° west to 170° east longitude.

The region was found to include more than 50 grassy islands ranging in size from only a few acres to many square miles. Only those islands to which transportation could readily be obtained were investigated. Short trips were made to investigate grass-covered regions in the vicinity of the places where the ship stopped. In most of the places the regions that seemed to be usable for grazing were so small as to permit making a complete reconnaissance during the short time the ship was in port.

Topography.—Nearly all the islands are submerged mountain tops, and in many instances the old extinct volcanic peaks have very steep sides. Deep gullies cut the region and make it difficult to travel from one valley to another. The valleys in turn are cut by deep canyons, and sometimes it is necessary to cross divides of many hundred or thousands of feet in elevation in going from one grassy valley to the next. In many instances steep cliffs are to be found at the foot of the valleys. In other instances streams pass over falls to enter the sea. Some of the islands are less rugged than others and have larger areas of grass.

Climate.—The climate of the islands is always mild near the seashore. Some of the higher mountains are perpetually covered with snow. Temperatures near the seashore range from 35° to 75° F. in summer, and from 15° to 50° in winter. The total annual precipitation is about 55 inches, and it is distributed rather evenly throughout the year. It is not unusual to find that rain falls every afternoon for many days in succession each month. The air is so moist that sometimes wool must be artificially dried after the fleece is shorn.

Population.—The population of the region is very sparse. Nearly all the inhabitants are native Aleuts having some Russian blood. The few white persons who live in the region are mostly traders.

Vegetation.—All the islands are treeless. The mountain tops are usually bare. At the lower elevations on the mountain sides several types of grasses and a dense growth of mosslike plants may be found. The grasses are suitable for summer grazing. At the heads of bays there are some large areas of beach rye and sedge. Where these regions are not cut up too deeply by gullies and streams they may be mowed for silage grasses. The grasses form a very dense growth in some places and attain a height of about 4 feet.

Livestock.—Numerous attempts have been made in the past to raise livestock on the islands. The information obtained on the history of the attempts to produce livestock in the region is far from complete. During the Russian occupation cattle, sheep, and hogs were introduced at various places, but no trace of Russian stock is to be found except some descendants of a few head of cattle at Seldovia, Kodiak, and Sand Point. These cattle are characterized by a slight hump on the shoulders.

It has been reported that in 1853 Captain Nice brought 500 head of sheep to Dutch Harbor Island and that the animals were severely attacked by foot rot and had to be slaughtered. In 1892, the steamer *Bertha*, commanded by Capt. Axel Olsen and owned by the Alaska Commercial Co., brought a bull and four long-horned beef cattle from San Francisco to Chirikoff Island. These cattle were abandoned and let run wild. They increased in numbers. In 1921, when Captain Olsen landed again on the island, he estimated that the herd included 400 animals. In 1917, Andrew Smith, of Portland, Oreg., sent a total of 600 sheep to these islands, delivering 200 head each at Chernofski, Nikolski, and Dutch Harbor. In 1923, an additional 1,000 head were shipped to Chernofski. In 1923, the Aleutian Livestock Co. shipped 1,000 head of sheep to Chernofski. These animals were landed near the same place where Doctor Smith had landed his lot. The sheep arrived in October, but owing to lack of feed and to exposure, 50 per cent of the flock of each company was lost by the spring

of 1924. In 1927, 76 sheep were landed at the head of Dalgai Bay. At present the number of livestock in southwestern Alaska includes approximately 50 dairy cattle, 400 beef cattle, and 400 sheep on the Kodiak and Afognak Islands; 400 beef cattle on Chirikoff Island; 75 sheep at Dulgia Harbor; 5 dairy cattle at Seldovia; 18 beef cattle at Sand Point; 4,000 sheep and 12 dairy cattle on Umnak Island; 3,000 sheep and 10 dairy cattle on Unalaska Island; and 2 dairy cattle at Perry.

Feed.—Feed on the islands is very plentiful. Grasses along the mountain sides are sources of good pasture during the summer. A heavy growth of mosslike plants among the grasses causes the ground to be moist at nearly all times. The grasses grow in places that are too rugged and steep to permit cutting. Beach rye and sedge may be found growing at the heads of many bays. These grasses can be cut for silage in places where the topography is not cut up by deep gullies. Hay making is not possible. The season is too short and rainy to permit curing the hay. The air is so moist that hay which was dry when shipped will absorb sufficient moisture to heat and become moldy when it is placed under shelter in the open. Stock must be maintained by feeding during February, March, and April, except in the western part of Unalaska and Umnak Islands. In this part the snow seldom remains on the ground longer than a few hours. Sheep do well on the upland grasses during the summer and feed on beach rye early in the spring.

Transportation facilities and harbors.—Transportation facilities and favorable harbors are among the chief problems to be solved. The distance from Seattle to Unalaska is more than 1,000 miles, and the journey takes six days by direct route and nearly two weeks via Seward. Freight charges for provisions are high because of the long distance. Mail steamers arrive only once a month, and, obviously, fresh meats and vegetables are luxuries to the white persons living in these regions. The steamers do not land at all places where small grazing areas are available. The last steamship dock to the westward is at Unalaska. Harbors at the settlements are poor, and the sea in this region is rough nearly every month of the year. When storms are too heavy, provisions and mail must remain aboard ship and be delivered a month later. The heavy waves would swamp smaller boats in their attempt to meet the mail steamer. Two of the ranching enterprises now have their own power boats, and can get their mail and provisions from Unalaska when the weather is good.

Comments.—The region is too isolated to permit those living at a distance to have work done by hired labor, even under supervision. Local white labor is not available. Native labor is not dependable. The native works for a few days and frequently decides to lay off at the time he is needed most.

The future of the livestock industry seems to be promising. The western ends of Unalaska and Umnak Islands have large grassy areas where sheep can feed throughout the year. These regions are suitable for large ranches and are now occupied by two large companies. No other region was found to be suitable for large livestock enterprises. The areas for ranging are too limited, and snow covers the ground in most of the desirable places during a part of each month in winter. The grassy areas at the heads of bays and inlets are

suitable for flocks of sheep numbering up to about 500, depending upon the size of the area on which silage grass may be cut for winter feed. Small ranchers can not afford to select a place that is too far from the regular steamship routes, and the expense of operating a seaworthy boat from the range to the steamship port would be too great to make livestock raising on a small scale profitable. Should a number of owners of small flocks become established in these places it is likely that small commercial vessels could be profitably run to transport supplies from the ranches to the larger ocean-going steamers. The small boats would of course have to select days of fair weather for their trips.

SURVEY OF THE BUNCH-GRASS RANGE AT HEALY AND LIGNITE

During the week of August 18–25, 1928, W. T. White, associate animal husbandman of the Matanuska station, made an agricultural survey in the vicinity of Healy and Lignite on the north slope of the Alaska range to determine the value and extent of the bunch-grass areas found there.

Character of country.—The lands lying near and adjacent to the western side of the Nenana River, between Pangingie Creek and the foothills on the south side of Dry Creek, constitute the north and south limits of the more valuable part of the area. Westward from the Tanana River the land lies in benches. These, in the past, obviously constituted the western limits of the river at various succeeding levels. The faces of the benches, six in number, are steep and fairly straight, and parallel the present course of the river. The benches vary from 100 yards to 1½ miles in width, and from a few hundred yards to 8 miles in length. The narrower and shorter of the benches lie closest to the river; those of the greatest area are the farthest removed. The tops of the benches are practically flat, but slight depressions occur here and there throughout the area.

Soil.—The soil consists of gravel and gravelly clay, overlain by 6 to 20 inches of finer soil. On areas that have been heavily burned no moss or leaf mold is apparent on the top of the soil. On other areas that have been lightly burned over the moss lies in a scanty layer, with 1 to 2 inches of leaf mold on top of the soil.

Climate.—Data gathered from reliable sources show that little or no snow lies on the ground longer than three to seven days at any one time because of the high winds that blow and the chinook winds which generally follow storm periods. The estimated precipitation for the region is less than 15 inches annually. Weather as cold as −40° F. may occur frequently throughout the winter, but the atmosphere remains dry, and the cold snaps are as a rule of short duration.

Grasses.—Bunch grass grows on the dry level portions of the area, and good stands of bluetop (*Calamagrostis* sp.) on the moist depressions where the drainage is good. Sedge (*Carex cryptocarpa*) grows in the deep depressions and in places where water stands for some time in the spring and after the summer rains. The more valuable part of the flora on the benches includes bunch grass, bluetop, and sedge.

Extent of areas.—The section of land upon which the Gibson ranch is located, near Lignite, is a fair example of the entire bunch-grass

area. It has approximately 25 acres of scrub timber consisting of small groups of cottonwood and spruce. Bluetop is found growing on about 15 acres in small areas of one-half acre to 3 acres each, and sedge on about 4 acres. Bunch grass occupies the rest of the area. The bunch-grass area, taken as a whole, would largely fall within the limits of a measured area 4 miles west from Lignite and 6 miles south from the mouth of Pangingie Creek, approximately 24 square miles. Other areas are small, irregular, and interspersed with "niggerhead" flats. The largest of these begins 4 miles west of Healy and extends to Dry Creek, approximately 8 miles, to the divide between the watersheds of the Nenana and Savage Rivers.

FIGURE 13.—Horses on range near Lignite

This part of Dry Creek Valley is approximately 4 miles wide, and a large portion of it is occupied by scrub timber, the dry wash of the creek, and "niggerhead" swamps. Not more than one-fourth of the area could be considered as bunch-grass land. Bunch grass also grows in small patches and on the drier knolls along the eastern side of the Nenana River between Healy River and Ferry Station, 10 miles below. This area, however, like the upper region of Dry Creek, is considerably spotted and interspersed with bunches of timber and "niggerhead" swales. The land generally lies higher and rises rather steeply from the Nenana River to the mountains 6 or 7 miles to the eastward. Lignite Creek, entering the Nenana River across from Lignite, is in a narrow valley, but supports a heavy growth of bluetop for the first 10 miles of its length, except for some few acres of spruce. A number of areas ranging in extent from 3 to 25 acres are

level and would permit the use of a mower in putting up bluetop hay for winter feeding. However, the east side of the Nenana is rather inaccessible at present because of the lack of adequate means for crossing the river. The river is deep, swift, and turbulent.

Burning.—At present it would seem advisable to burn over such areas as are covered with light muskeg and moss, and the drier knolls now occupied by brush and black birch. Small areas on which the brush was burned and ground fires were run show considerable gain in growth of valuable grasses over unburned areas.

Horses.—Horses have been wintered on the range and fed a little hay as a supplement to the forage they obtained on the open range. During the winter 1927–28 a settler placed on the range six horses that had been shipped in during the summer from Montana and worked until November 1. (Fig. 13.) The horses were thin when they were turned on pasture. During stormy periods they were fed a total of 3,600 pounds of timothy, or an average of 600 pounds per head. They gained in weight and were in fair working condition June 1, 1928.

Predatory animals.—The reported presence of numerous wolves and coyotes during the past two winters indicates that some trouble might be expected from these animals. Apparently they subsist largely on yearling and fawn caribou, 100 to 200 of which are estimated to range throughout the year in the foothills and near-by mountains. Cattle followed by young calves probably would attract these predatory animals during the winter, unless, of course, the former were closely herded.

Comments.—It is estimated that there is sufficient grass to maintain and fatten 15 head of mature cattle, or 150 head of sheep, per section (square mile) in each part of the land referred to as "bunchgrass area." There are approximately 200 square miles of this type of range in the vicinity of Healy.

WEATHER REPORTS

CONDENSED METEOROLOGICAL REPORTS FOR 1928

ALLAKAKET. Latitude 66° 34′, longitude 152° 44′. Miss A. K. Thompson, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	° F.	° F.	° F.	° F.	° F.	*Inches*				
January	22	−50	3.4	−16.9	−6.8	0.88	15	12	4	15
February	48	−46	16.8	−12.8	2.0	.97	10	10	5	14
March	42	−56	11.6	−29.2	−9.8	.05	2	6	17	8
April	58	−36	39.9	2.2	21.0	.08	2	6	9	15
May	72	19	58.4	30.8	44.6	.75	5	0	4	27
June	87	32	70.9	42.1	56.5	1.19	11	3	7	20
July										
August										
September	59	11	47.2	28.2	37.7	1.39	9	[1]2	[1]8	[1]16
October	39	−11	28.8	4.7	16.8	.19	4	11	4	16
November	42	−50	20.4	−7.3	6.6	1.72	7	5	11	14
December										

Condensed Meteorological Reports for 1928—Continued

ANCHORAGE. Latitude 61° 13′, longitude 149° 52′. Marion E. Nichols, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	° F.	° F.	° F.	° F.	° F.	*Inches*				
January	38	−2	25.0	12.6	18.8	0.60	4	9	3	19
February	46	6	31.2	17.3	24.2	1.96	7	1 2	1 7	1 19
March	44	−7	28.8	13.8	21.3	1.07	7	1 8	1 2	1 19
April	51	8	43.8	27.1	35.4	.43	2	10	3	17
May	68	28	55.4	36.3	45.8	.13	4	1 4	1 7	1 19
June	82	38	63.0	45.5	54.2	.89	9	10	4	16
July	75	37	62.9	49.5	56.2	2.28	16	3	4	24
August [1]	71	38	62.4	46.7	54.6	3.12	-------	3	3	18
September	61	23	53.5	36.4	45.0	2.54	17	6	5	19
October	52	17	42.0	28.6	35.3	1.34	11	9	1	21
November	51	−6	32.0	19.6	25.8	1.55	6	3	2	25
December	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

ANNEX CREEK. Latitude 58° 19′, longitude 134° 07′. Alaska-Gastineau Mining Co., observer

January	44	11	33.4	23.8	28.6	11.93	19	7	3	21
February	45	16	37.2	28.7	33.0	6.97	14	7	6	16
March	52	9	37.6	26.7	32.2	10.02	15	8	6	17
April	63	22	48.2	33.4	40.8	5.87	11	10	6	14
May	70	32	53.1	39.6	46.4	9.55	19	5	11	15
June	75	41	67.1	47.6	57.4	.70	6	19	6	5
July	76	43	62.5	48.3	55.4	7.98	11	7	7	17
August	71	39	60.6	46.2	53.4	8.69	16	9	4	18
September	68	37	54.4	42.5	48.4	13.80	23	3	5	22
October	57	20	47.2	38.0	42.6	13.26	19	6	7	18
November	47	20	40.2	31.8	36.0	10.21	22	5	2	23
December	42	12	35.9	27.2	31.6	9.79	17	5	5	21

BETHEL. Latitude 60° 45′, longitude 161° 47′. Weather Bureau, observer

January	38	−33	18.0	2.3	10.2	0.44	8	7	11	13
February	44	−20	24.9	13.1	19.0	.56	9	7	8	14
March	40	−20	11.6	−3.9	3.8	.17	1	22	6	3
April	53	−9	36.0	18.6	27.3	.09	2	8	9	13
May	76	14	52.9	30.9	41.9	.57	9	3	20	8
June	82	34	60.8	42.6	51.7	2.47	20	8	0	22
July	72	38	56.5	44.5	50.5	5.79	22	0	2	29
August	65	34	56.2	43.4	49.8	4.18	23	2	5	24
September	56	30	48.0	36.4	42.2	6.28	22	2	6	22
October	50	3	35.4	22.7	29.0	1.17	10	10	7	14
November	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
December	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

CALDER. Latitude 56° 10′, longitude 133° 27′. Harvey Sellers, observer

January	48	18	39.6	31.9	35.8	17.07	22	5	3	23
February	47	24	41.4	31.4	36.4	6.11	16	6	2	21
March	53	22	41.9	30.4	36.2	11.50	22	5	4	22
April	60	22	48.5	33.5	41.0	6.25	22	5	3	22
May	71	31	54.4	39.5	47.0	9.11	23	8	2	21
June	83	35	62.7	42.2	52.4	1.23	6	21	2	7
July	69	39	61.0	47.9	54.4	4.98	14	12	3	16
August	70	38	60.1	45.9	53.0	5.43	13	13	5	13
September	78	34	58.3	44.1	51.2	10.36	21	6	3	21
October	59	28	48.6	38.4	43.5	14.14	25	5	0	26
November	58	22	43.6	35.5	39.6	13.77	23	3	2	25
December	48	21	39.3	31.8	35.6	14.41	25	4	0	27

[1] Record incomplete.

Condensed Meteorological Reports for 1928—Continued

CHICKALOON. Latitude 61° 48′, longitude 148° 27′. Archie Lingo, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	° F.	° F.	° F.	° F.	° F.	*Inches*				
January	30	−12	21.7	4.4	13.0	0.98	5	9	7	15
February	42	−6	29.0	10.3	19.6	2.25	5	9	9	11
March	42	2	27.4	12.7	20.0	.85	5	13	8	10
April	52	2	42.4	22.6	32.5	.60	2	9	5	16
May	73	22	57.7	29.1	43.4			14	12	5
June	80	32	66.4	40.2	53.3	.69	5	9	7	14
July	79	29	67.0	42.7	54.8	1.23	9	11	14	6
August	77	30	63.9	42.9	53.4	1.55	13	9	10	12
September	67	17	55.3	31.9	43.6	2.02	10	6	6	18
October	52	8	41.0	24.8	32.9	.77	6	5	6	20
November	50	−17	29.2	12.5	20.8	1.77	7	15	5	10
December	35	−12	22.9	8.3	15.6	1.63	11	9	8	14

CHIGNIK. Latitude 56° 17′, longitude 158° 22′. Ivor Wallin, observer

January	45	9	35.8	23.9	29.8	14.97	20	6	6	19
February	46	6	37.5	26.4	32.0	22.99	22	3	6	20
March	45	5	30.6	16.0	23.3	4.78	5	10	13	8
April	47	10	39.3	25.4	30.4	7.99	8	12	12	6
May	54	25	46.5	33.1	39.8	10.09	16.	10	8	13
June	66	32	54.1	38.7	46.4	-16.24	12	10	10	10
July	66	36	57.6	42.0	49.8	3.90	13	12	9	10
August	64	33	56.3	41.5	48.9	9.96	14	9	12	10
September	59	28	50.9	38.0	44.4	9.19	21	8	9	13
October	54	21	46.2	33.4	39.8	18.71	20	10	6	15
November	48	9	38.7	25.5	32.1	22.75	18	8	11	11
December	45	6	35.3	24.2	29.8	18.81	17	7	10	14

CORDOVA. Latitude 60° 32′, longitude 145° 42′. Weather Bureau, observer

January	43	13	34.5	26.7	30.6	10.40	18	8	5	18
February	44	22	38.1	30.1	34.1	25.52	20	3	4	22
March	42	4	36.9	23.5	30.2	8.35	18	6	4	21
April	51	25	44.0	31.6	37.8	5.61	22	10	2	18
May	62	29	50.1	36.7	43.4	9.96	23	3	8	20
June	74	37	59.0	45.4	52.2	5.54	13	9	7	14
July	69	43	58.7	49.1	53.9	10.59	19	2	5	24
August	62	38	56.6	48.7	52.6	12.72	20	1	3	27
September	57	32	51.6	41.2	46.4	28.91	25	5	7	18
October	56	29	45.8	35.5	40.6	26.14	19	6	7	18
November	55	18	39.0	30.5	34.8	30.14	23	5	2	23
December										

EAGLE. Latitude 64° 46′, longitude 141° 12′. Weather Bureau, observer

January	23	−26	8.8	−4.9	2.0	0.19	6	12	3	16
February	38	−21	18.8	4.1	11.4	.38	5	10	1	18
March	30	−45	8.9	−16.9	−4.0	.59	9	11	6	14
April	58	−34	37.2	6.8	22.0	1.05	8	13	4	13
May	62	21	52.6	31.6	42.1	.99	9	1	11	19
June	80	36	68.0	43.6	55.8	1.36	15	9	8	13
July	78	33	70.7	45.2	58.0	2.10	13	8	7	16
August	76	30	61.7	40.1	50.9	2.50	15	6	5	20
September	61	13	44.9	30.9	37.9	.66	7	6	5	19
October	42	−2	29.1	17.2	23.2	.57	7	9	3	19
November	42	−29	25.4	10.9	18.2	.59	6	3	7	20
December										

Condensed Meteorological Reports for 1928—Continued

FAIRBANKS. Latitude 64° 51′, longitude 147° 52′. F. L. Higgins, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	° F.	° F.	° F.	° F.	° F.	Inches				
January	22	−24	10.2	−7.5	1.4	0.60	6	8	9	14
February	45	−26	22.1	0.6	11.4	.70	8	[1] 9	[1] 8	[1] 11
March	39	−35	15.5	−10.3	2.6	.61	9	12	8	11
April	54	−7	41.1	16.4	28.8	.17	1	9	13	8
May	73	24	61.2	33.4	47.3	.78	5	9	13	9
June	88	35	70.4	44.4	57.4	1.43	14	4	13	13
July	85	32	74.9	45.7	60.3	.54	3	6	22	3
August	86	34	66.7	42.5	54.6	1.25	12	3	19	9
September	68	23	52.9	31.1	42.0	.97	13	4	14	12
October	45	−1	35.9	14.1	25.0	.28	6	5	19	7
November	43	−13	21.3	3.5	12.4	.34	8	3	18	9
December	41	−37	15.0	−3.2	5.9	.39	6	4	16	11

FORT YUKON. Latitude 66° 34′, longitude 145° 18′. Weather Bureau, observer

January	8	−40	−7.0	−20.2	−13.6	0.12	3	14	4	13
February	26	−28	1.9	−16.8	−7.4	.29	4	18	2	9
March	37	−39	4.2	−18.0	−6.9	.28	6	17	3	11
April	55	−12	35.9	9.0	22.4	.22	1	20	1	9
May	65	24	56.2	31.1	43.6	.22	5	14	6	11
June	85	37	69.8	47.8	58.8	2.24	5	15	5	10
July	86	42	73.3	51.9	62.6	.50	6	17	4	10
August	81	29	64.7	43.9	54.3	1.19	12	10	9	12
September	63	19	48.1	29.9	39.0	1.08	6	8	4	18
October	32	−13	23.7	6.2	15.0	.07	2	19	2	10
November	36	−29	11.7	−5.3	3.2	.52	5	18	0	12
December										

HAINES. Latitude 59° 13′, longitude 135° 34′. E. E. Bromley, observer

January	42	5	32.5	20.8	26.6	8.40	18	9	4	18
February	49	13	37.5	25.7	31.6	3.49	11	8	4	17
March	49	8	36.5	22.5	29.5	5.92	15	10	4	17
April	53	20	44.7	30.4	37.6	2.56	15	13	6	11
May	69	31	53.6	39.5	46.6	3.29	14	3	10	18
June	85	35	65.4	45.5	55.4	.91	4	12	7	11
July	87	36	69.2	48.6	58.9	.98	7	9	6	16
August [1]	73	39	64.2	46.2	55.2	2.33	7	6	4	15
September	70	35	59.9	43.6	51.8	4.97	15	4	7	19
October	57	24	47.5	36.1	41.8	5.83	16	5	6	20
November	52	9	40.9	30.8	35.8	10.32	19	5	5	20
December	44	5	35.1	24.9	30.0	8.19	20	7	7	17

HOLY CROSS. Latitude 62° 16′, longitude 159° 50′. Holy Cross Mission, observer

January	38	−46	13.6	−5.0	4.3	1.27	12	6	9	16
February	44	−28	25.1	10.8	18.0	.38	4	14	12	3
March	41	−24	13.4	−4.3	4.6	.12	3	27	3	1
April	51	1	39.3	20.3	29.8	.16	2	21	7	2
May	74	15	54.9	33.8	44.4	.91	11	17	12	2
June	82	35	62.9	45.0	54.0	3.87	12	12	7	11
July	79	40	59.3	46.1	52.7	8.96	20	4	11	16
August	66	32	57.5	43.9	50.7	5.06	22	7	12	12
September	65	15	50.8	36.4	43.6	4.91	19	5	14	11
October	48	4	36.3	22.0	29.2	1.42	6	7	13	11
November	48	−12	22.9	9.8	16.4	1.47	8	6	2	22
December										

[1] Record incomplete.

Condensed Meteorological Reports for 1928—Continued

JUNEAU. Latitude 58° 18′, longitude 134° 24′. Weather Bureau, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	° F.	° F.	° F.	° F.	° F.	Inches				
January	46	19	36.8	29.1	33.0	13.46	21	5	3	23
February	50	20	39.2	30.9	35.0	5.32	18	6	3	20
March	47	11	37.1	27.3	32.2	6.74	18	5	4	22
April	54	24	44.3	33.7	39.0	4.66	16	5	4	21
May	65	32	51.7	39.6	45.6	8.25	25	3	5	23
June	78	40	65.2	46.2	55.7	.93	9	11	10	9
July	85	44	63.0	49.6	56.3	4.61	13	9	0	22
August	70	43	58.3	48.0	53.2	6.10	18	6	3	22
September	66	41	53.7	45.1	49.4	8.44	24	2	3	25
October	54	30	48.2	39.0	43.6	11.43	22	3	6	22
November	58	22	42.8	34.7	38.8	9.02	23	5	0	25
December	45	20	37.6	31.2	34.4	10.41	22	3	2	26

KENNECOTT. Latitude 61° 29′, longitude 142° 57′. Kennecott Copper Corporation, observer

January	34	−24	16.8	0.7	8.8	0.78	7	10	3	18
February	41	−2	28.5	11.1	19.8	1.59	6	12	3	14
March	42	−13	28.1	8.8	18.4	.88	6	9	3	19
April	49	2	40.3	20.3	30.3	.36	1	14	2	14
May	66	21	53.0	32.0	42.5	.76	6	18	3	10
June	77	33	66.1	39.8	53.0	1.15	6	17	3	10
July	73	35	63.9	40.0	52.0	2.39	10	13	3	15
August	68	30	59.4	39.0	49.2	1.30	16	7	4	20
September	59	26	47.8	32.9	40.4	4.14	17	4	2	24
October	48	12	36.3	23.9	30.1	1.05	5	6	2	23
November	43	−14	29.7	15.1	22.4	4.04	9	6	1	23
December	42	−18	24.2	9.9	17.0	.59	3	8	0	23

KETCHIKAN. Latitude 55° 20′, longitude 131° 27′. H. G. Anderson, observer

January	52	21	43.0	31.7	37.4	18.33	23	7	2	22
February	53	21	44.0	29.5	36.8	13.88	14	9	2	18
March	54	23	45.8	31.4	38.6	23.87	21	7	4	20
April	58	25	49.1	33.9	41.5	7.54	24	2	6	22
May	72	32	55.5	40.5	48.0	12.28	26	5	3	23
June	84	36	68.5	45.6	57.0	2.34	9	22	2	6
July	80	43	64.6	49.3	57.0	9.14	16	12	3	16
August	79	43	64.7	47.9	56.3	7.08	12	12	4	15
September	76	38	59.8	44.5	52.2	10.90	18	8	1	21
October	58	30	51.5	37.8	44.6	16.10	24	5	7	19
November	60	23	47.4	34.4	40.9	13.79	21	4	4	22
December	51	20	41.7	32.4	37.0	17.08	24	3	0	28

KODIAK. Latitude 57° 48′, longitude 152° 22′. Experiment Station, observer

January	41	17	36.9	29.6	33.2	7.37	21	3	7	21
February	43	19	38.2	30.2	34.2	5.40	27	2	6	21
March	46	9	33.1	22.6	27.8	2.37	16	10	7	14
April	48	22	41.4	31.3	36.4	3.25	16	9	5	16
May	60	33	46.1	37.2	41.6	7.69	24	3	6	22
June	71	39	54.6	42.9	48.8	3.73	17	6	5	19
July	62	40	55.8	46.2	51.0	6.53	20	0	7	24
August										
September										
October										
November										
December										

Condensed Meteorological Reports for 1928—Continued

LATOUCHE. Latitude 60° 03′, longitude 147° 55′. Kennecott Copper Corporation, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	° F.	° F.	° F.	° F.	° F.	Inches				
January	49	19	38.5	29.4	34.0	21.26	22	10	5	16
February	46	22	39.5	31.5	35.5	24.20	24	3	2	24
March	46	13	38.6	26.4	32.5	16.12	16	9	6	16
April	50	22	44.0	31.9	38.0	17.60	22	8	5	17
May	67	30	50.7	37.6	44.2	16.59	24	4	3	24
June	77	39	59.8	43.7	51.8	5.50	12	9	7	14
July	68	45	59.8	48.7	54.2	6.43	20	5	7	19
August	66	40	60.6	47.6	54.1	16.38	17	8	1	22
September	64	34	55.8	41.7	48.8	17.39	17	10	5	15
October	58	30	50.3	37.3	43.8	24.05	21	9	3	19
November	55	20	43.3	32.8	38.0	27.47	24	5	2	23
December	46	11	39.4	30.2	34.8	43.56	27	3	2	26

McKINLEY PARK. Latitude 63° 44′, longitude 148° 55′. E. G. Moore, observer

January	39	−16	24.4	6.0	15.2	0.17	2	19	11	1
February	44	−15	29.9	12.2	21.0	1.41	5	18	5	6
March	40	−24	7.7	−11.9	−2.1	.48	3	15	8	8
April	47	−10	37.3	16.1	26.7	.14	2	21	4	5
May	65	19	50.7	29.5	40.1	.77	3	12	16	3
June	78	33	61.6	40.3	60.0	1.63	6	[1] 12	[1] 8	[1] 8
July	76	31	61.7	43.7	52.7	.79	6	[1] 15	[1] 6	[1] 5
August	75	31	60.4	41.7	51.0	3.72	14	[1] 4	[1] 7	[1] 19
September	59	24	46.7	30.7	38.7	1.00	3	[1] 7	[1] 6	[1] 12
October	45	2	29.0	14.0	21.5	.36	3	[1] 13	[1] 9	[1] 8
November	56	−17	27.5	10.5	19.0	1.02	3	10	6	14
December	36	−31	18.2	2.6	10.4	1.38	5	7	10	14

MATANUSKA. Latitude 61° 30′, longitude 149° 15′. Experiment Station, observer

January	42	−8	26.0	8.7	17.4	0.55	3	9	3	19
February	46	0	34.4	16.7	25.6	1.23	6	9	12	8
March	40	−12	29.7	11.8	20.8	1.34	9	11	6	14
April	54	9	45.7	27.3	36.5	.44	4	10	8	12
May	73	25	58.4	34.8	46.6	.29	3	9	15	7
June	84	36	66.6	44.5	55.6	1.33	8	9	9	12
July	82	38	66.9	47.1	57.0	1.71	12	5	11	15
August	71	35	63.0	45.9	54.4	2.05	14	2	8	21
September	61	22	53.9	35.5	44.7	3.29	15	7	6	17
October	49	16	43.5	27.4	35.4	.63	4	12	4	15
November	49	−15	33.8	18.6	26.2	2.06	8	8	8	14
December										

NOME. Latitude 64° 30′, longitude 165° 24′. Weather Bureau, observer

January	34	−30	16.2	−0.1	8.0	1.68	16	7	10	14
February	38	−24	18.1	3.3	10.7	.99	8	8	12	9
March	35	−32	8.4	−7.9	0.2	.04	2	21	7	3
April	41	−2	28.7	13.4	21.0	T.	0	11	13	6
May	55	9	42.2	26.6	34.4	T.	0	14	13	4
June	79	31	54.0	39.4	46.7	1.47	14	9	7	14
July	74	31	55.6	42.3	49.0	2.77	18	2	11	18
August	63	30	53.8	41.5	47.6	3.82	21	1	10	20
September	52	22	45.4	32.2	38.8	3.14	15	3	10	17
October	42	0	34.1	22.9	28.5	.49	5	7	9	15
November										
December										

[1] Record incomplete.

Condensed meteorological reports for 1928—Continued

PORCUPINE CREEK. Latitude 59° 22′, longitude 136° 16′. A. Fritsche, observer

Month	Temperature				Monthly mean	Total precipitation	Rain or snow	Number of days—		
	Maximum	Minimum	Mean maximum	Mean minimum				Clear	Partly cloudy	Cloudy
	° F.	° F.	° F.	° F.	° F.	*Inches*				
January	40	−18	22.9	6.1	14.5	3.55	9	13	2	16
February	44	−12	32.9	9.5	21.2	3.37	5	11	8	10
March	45	−23	34.9	7.9	21.4	4.42	14	12	4	15
April	54	−4	46.1	20.2	33.2	1.75	5	11	9	10
May	71	25	57.8	30.5	44.2	3.68	9	12	6	13
June	86	29	72.8	37.8	55.3	.88	3	19	8	3
July	90	30	72.1	41.8	57.0	1.22	5	12	10	9
August	76	29	67.3	39.3	53.3	1.40	5	10	14	7
September	71	34	59.3	41.2	50.2	3.75	10	3	16	11
October	56	23	47.7	34.6	41.2	3.18	11	8	9	14
November	55	−3	40.6	24.8	32.7	9.93	22	6	4	20
December	41	−18	30.5	13.3	21.9	3.98	12	11	7	13

RAMPART. Latitude 65° 30′, longitude 150° 15′. Clement Anderson, observer

January	10	−38	0.1	−10.6	−5.2	0.28	2	8	6	17
February	31	−27	8.9	−4.7	2.1	.54	2	9	6	14
March	37	−38	4.1	−14.0	−5.0	.52	2	20	1	10
April	54	−4	34.0	12.1	23.0	.14	2	20	5	5
May	70	23	56.8	31.0	43.9	.95	5	14	11	6
June	84	34	67.8	40.8	54.3	.95	3	13	14	3
July	86	34	70.7	44.4	57.6	1.59	4	20	5	6
August	87	29	64.6	40.5	52.6	1.38	7	10	7	14
September	62	15	47.8	30.4	39.1	1.75	11	9	5	16
October	32	−3	24.8	9.8	17.3	.25	2	10	5	16
November	35	−30	14.2	1.3	7.8	.42	5	5	5	20
December	24	−43	5.8	−6.8	−0.5	.68	6	9	5	17

SITKA. Latitude 57° 03′, longitude 135° 19′. Experiment Station, observer

January	51	13	42.6	29.5	36.0	17.73	23	4	8	19
February	51	18	42.9	30.3	36.6	7.79	20	5	7	17
March	53	13	44.9	27.8	36.4	6.70	19	3	11	17
April	60	22	49.6	32.6	41.1	4.98	18	1	16	13
May	70	31	54.8	38.6	46.7	6.89	26	2	10	19
June	78	36	62.8	43.0	52.9	1.20	9	7	15	8
July	71	38	61.8	47.3	54.6	4.54	16	3	11	17
August	68	36	60.5	46.3	53.4	7.34	21	2	10	19
September	74	32	58.6	44.5	51.6	9.13	28	0	13	17
October	61	26	51.2	37.2	44.2	13.00	26	2	15	14
November	62	17	48.0	34.4	41.2	10.39	23	3	5	22
December	52	17	43.0	29.4	36.2	11.09	22	3	10	18

SKAGWAY. Latitude 59° 27′, longitude 135° 19′. P. I. Dahl, observer

January	46	3	34.6	24.7	29.6	3.75	9	16	13	2
February	48	14	39.4	29.2	34.3	2.20	6	16	3	10
March	50	5	36.8	23.4	30.1	3.39	8	21	4	6
April	58	19	47.7	30.3	39.0	1.14	7	19	7	4
May	75	28	56.6	41.3	49.0	1.40	10	20	10	1
June	85	32	68.1	45.2	56.6	.94	4	25	4	1
July	87	37	67.7	49.2	58.4	1.23	5	10	15	6
August	70	35	62.8	48.9	55.8	1.88	7	10	5	16
September	77	32	58.0	44.8	51.4	2.41	15	5	6	19
October	53	25	48.1	37.8	43.0	3.31	10	4	11	16
November	53	10	41.8	31.4	36.6	7.26	19	5	7	18
December	47	12	36.8	26.9	31.8	7.30	13	8	8	15

Condensed meteorological reports for 1928—Continued

TALKEETNA. Latitude 62° 19′, longitude 150° 16′. P. W. McCarthy, observer

Month	Temperature				Monthly mean	Total precipitation	Rain or snow	Number of days—		
	Maximum	Minimum	Mean maximum	Mean minimum				Clear	Partly cloudy	Cloudy
	° F.	° F.	° F.	° F.	° F.	Inches				
January	34	−20	24.0	2.6	13.3	1.89	6	7	4	20
February	47	−5	30.7	12.9	21.8	4.26	10	4	1	24
March	40	−23	30.9	8.7	19.8	3.02	12	10	5	16
April	53	1	46.6	21.1	33.8	.53	2	10	8	12
May	76	20	58.9	31.3	45.1	.52	5	4	7	20
June	88	35	69.1	42.4	55.8	2.18	10	5	12	13
July	87	33	67.5	46.2	56.8	5.22	13	3	0	28
August	70	32	61.9	43.6	52.8	5.14	17	1	2	28
September	63	20	51.9	32.8	42.4	6.98	16	4	5	21
October	50	10	42.2	23.9	33.0	1.65	5	14	4	13
November	50	−8	30.9	14.7	22.8	1.93	9	6	4	20
December	34	−24	26.7	13.1	19.9	3.02	12	1	5	25

TANANA. Latitude 65° 10′, longitude 152° 06′. Weather Bureau, observer

January	16	−40	6.2	−6.9	−0.4	0.59	10	14	10	7
February	38	−43	14.1	−0.5	6.8	.67	6	11	9	9
March	36	−41	8.6	−15.0	−3.2	.59	9	17	9	5
April	54	−16	36.1	14.0	25.0	.17	3	18	10	2
May	73	21	58.7	33.2	46.0	.40	10	10	15	6
June	83	35	66.3	42.0	54.2	2.21	20	5	16	9
July	83	36	70.3	45.7	58.0	2.81	20	4	19	8
August	82	30	63.3	42.8	53.0	2.23	22	2	14	15
September	59	17	48.4	33.1	40.8	3.17	19	2	13	15
October	36	−4	27.9	14.2	21.0	.36	5	11	15	5
November	38	−32	16.1	3.1	9.6	.36	12	8	14	8
December	26	−45	7.6	−6.3	0.6	.40	11	10	15	6

VALDEZ. Latitude 61° 07′, longitude 146° 16′. J. A. McGilvray, observer

January	35	2	28.2	15.9	22.0	6.39	12	12	0	19
February[1]	35	13	31.8	20.6	26.2	14.24	11	3	0	20
March										
April		15		26.8				[1] 10	[1] 0	[1] 19
May	58	23	42.8	33.5	38.2	2.43	21	6	11	14
June	74	34	56.0	38.8	47.4	3.47	13	14	3	13
July	67	40	57.3	45.3	51.3	4.75	20	8	1	22
August	66	36	56.1	45.3	50.7	9.27	25	4	1	26
September	57	31	48.8	36.8	42.8	14.74	20	6	4	20
October	56	23	43.1	30.5	36.8	9.57	16	10	1	20
November	52	8	35.2	24.6	29.9	11.16	19	9	1	20
December	39	5	30.6	21.1	25.8	16.66	21	6	3	22

WHALE ISLAND. Latitude 57° 58′, longitude 152° 6′. B. C. Parker, observer

January	41	18	37.4	27.8	32.6	6.81	12	9	9	13
February	48	18	39.0	29.7	34.4	7.06	18	7	8	14
March	[1] 45	8	[1] 35.1	21 2	[1] 28.2	1.35	8	19	4	8
April		18		29.1		2.79	13	12	11	7
May	[1] 62	29	[1] 47.3	35.6	[1] 41.4	10.23	22	6	10	15
June	69	33	56.2	42.5	49.4	3.60	10	17	6	7
July	68	35	58.2	45.5	51.8	4.41	17	7	10	14
August	70	38	59.6	45.7	52.6	4.57	16	10	12	9
September	60	27	53.8	38.3	46.0	5.68	17	16	8	6
October	53	25	46.3	34.8	40.6	6.81	19	7	13	11
November										
December										

[1] Record incomplete.

Condensed Meteorological Reports for 1928—Continued

WHITE MOUNTAIN. Latitude 64° 40′, longitude 162° 20′. T. P. McCollister, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	° F.	° F.	° F.	° F.	° F.	*Inches*				
January [1]	41	−37	17.2	−8.0	4.6	-------	-------	14	4	8
February [1]	49	−40	24.4	1.2	12.8	4.18	8	10	4	10
March [1]	43	−32	18.6	−4.4	7.1	T.	0	25	2	0
April [1]	59	0	39.6	11.8	25.7	.12	5	[1] 20	[1] 2	[1] 6
May	72	10	49.7	33.9	41.8	.02	2	25	4	2
June [1]	86	33	72.4	42.5	57.4	-------	-------	10	2	6
July [1]	72	40	66.3	48.7	57.5	-------	-------	6	3	12
August	70	35	61.9	46.4	54.2	8.53	25	2	7	22
September	58	29	52.0	33.1	42.6	2.37	7	[1] 11	[1] 7	[1] 6
October	44	2	35.8	16.0	25.9	.03	2	[1] 18	[1] 4	[1] 6
November	45	−22	26.9	4.7	15.8	.09	3	24	3	3
December	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

WRANGELL. Latitude 56° 28′, longitude 132° 23′. A. Rasmussen, observer

January	49	8	38.1	27.4	32.8	11.88	20	8	3	20
February	49	19	41.0	29.1	35.0	5.74	13	6	5	18
March	57	18	44.3	30.2	37.2	6.20	16	8	3	20
April	58	23	50.6	35.2	42.9	4.30	19	5	9	16
May	74	33	56.8	39.9	48.4	8.51	24	5	8	18
June	84	38	71.4	44.0	57.7	1.47	8	18	3	9
July	80	40	70.7	48.7	59.7	5.18	16	7	4	20
August	75	38	66.4	46.0	56.2	3.30	13	11	3	17
September	77	34	60.6	43.6	52.1	8.24	21	4	6	20
October	56	28	50.1	38.0	44.0	13.10	20	5	6	20
November	62	23	45.3	34.4	39.8	10.06	24	5	3	22
December	49	19	40.1	30.4	35.2	10.15	25	2	4	25

YAKUTAT. Latitude 59° 33′, longitude 139° 44′. E. M. Axelson, observer

January	41	14	36.2	27.1	31.6	9.57	16	7	3	21
February	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
March	42	15	36.3	26.7	31.5	12.40	13	8	4	19
April	50	20	43.0	30.2	36.6	7.72	15	5	4	21
May	60	31	47.7	35.7	41.7	11.75	20	6	5	20
June	65	39	57.7	46.2	51.0	1.22	6	10	2	18
July	60	41	57.0	47.6	52.3	6.39	14	6	4	21
August [1]	68	40	56.9	45.2	51.0	9.36	-------	6	5	15
September	57	35	51.9	42.3	47.1	15.99	27	3	1	26
October	52	28	46.7	35.5	41.1	15.89	14	7	7	17
November	50	20	40.7	33.2	37.0	28.83	21	7	1	22
December	45	15	37.6	29.0	33.3	22.85	22	7	4	20

[1] Record incomplete.

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